The Journal of the American Medical Association

Published under the Auspices of the Board of Trustees.

VOL. XLVII. CHICAGO, ILLINOIS, OCTOBER 20, 1906. No. 16.

Original Articles

THE SIMULTANEOUS OCCURRENCE OF TWO NON-RELATED TUMORS IN A MOUSE.*

E. E. TYZZER, M.D.

Director of Cancer Research, Harvard Medical School

BOSTON.

HISTORY OF THE CASE.

The tumors described in the present paper occurred in an old uninoculated mouse kept apart for breeding purposes. They were primary in the lung and in the kidney.

History.—The mouse was an old, black, female, purchased April 29, 1905. It died Aug. 4, 1905. During this time, slightly over three months, it raised two litters of young and was vigorous and apparently in good health up to the last week of its life. At this time the two young ones, which were then about three weeks old, appeared small and poorly nourished, but were soon able to care for themselves. The mother ate irregularly and became uneasy. There was a slight loss of flesh and toward the last the animal's breathing became labored. An autopsy was made immediately after death.

Autopsy.—The superior lobe of the right lung occupies the major portion of the right thorax. Within this lobe, and involving the greater portion of it, is a grayish white mass measuring 5x10x10 mm. The surface of the mass, presenting to the lateral wall of the thorax, has a slightly depressed central portion and an elevated border. At both ends and along the anterior edge is a small amount of air-containing lung tissue which is also grayish white. On section small nodules were found in the lung substance about the mass just described. In the surface of the middle lobe of the right lung are two minute nodules only a fraction of a millimeter in diameter. The other lobes of the lung were pink and apparently normal with the exception of a minute area of consolidation at the left apex. The pleural cavity contains a small amount of fluid, but there are no adhesions.

The kidneys present a puckered, uneven surface with many clear spots not over a millimeter in diameter, probably retention cysts. Scattered throughout the substance of the kidney are opaque whitish or yellowish points. In the right kidney near its anterior extremity is a yellowish white nodule one and one-half millimeters in diameter, elevating the surface. The other organs present no gross lesions.

A fresh teased preparation of the mass in the lung examined microscopically showed it to be an epithelial growth. One portion of this tumor was fixed in Zenker's fluid and the remainder was placed immediately on ice until preparation was made for its inoculation into other mice.

INOCULATION OF OTHER MICE.

About two hours after the autopsy, the portion of the lung tumor which had been placed on ice was snipped into small bits and inoculated subcutaneously into five mice. Following the inoculation a small mass appeared in each mouse at the site of inoculation. This was apparently due to exudation about the material inoculated, and a fortnight later it had entirely disappeared. In one mouse, sixteen days after the inoculation, there was a minute subcutaneous nodule which increased slowly in size and appeared as a rounded, slightly elevated translucent mass about 3 mm. in diameter. Four weeks after its appearance this mass, which was evidently a small cyst, ruptured and practically disappeared, but after a few days it began to fill out again. After rupturing a second time it finally disappeared about fourteen weeks after the inoculation. All five mice were under observation for many months after the inoculation and nothing additional developed. The results of these inoculations will be considered in connection with the nature of the primary tumor.

THE PRIMARY LUNG TUMOR.

The primary tumor is essentially alveolar in structure (Fig. 1). It consists of epithelium which lines spaces made very irregular by projecting folds and processes. Some portions of the tumor present an open structure with cavities of considerable size, while other portions present a closer structure, most of the available space being filled by closely packed, irregular folds. This growth may be regarded as a carcinoma. The blood vessels of the tumor are empty, but towards the root of the lung are two large dilated vessels, the branches of the pulmonary artery and vein, which are filled with blood. Between the lobules of the primary tumor are several dilated bronchi. The tumor epithelium consists of cuboidal or columnar cells arranged in a single layer. The cells vary in size in different portions of the tumor, but are in all cases somewhat larger than the cells of the normal bronchial epithelium. The cell outline is distinct and there are no demonstrable cilia. In some portions of the tumor the nuclei present a pale, hollow appearance, and what chromatin is in evidence is rather evenly distributed. In other portions the nuclei, as well as the cells, are smaller and more deeply stained. Some of the nuclei are deeply fissured, so that they appear irregular. Cells are found with two or more nuclei; probably the result of this type of fission. Fission may take place in several different places simultaneously, so that the nucleus is divided in four, eight or even a greater number of segments. In the study of a great many sections no mitoses have been found.

A large proportion of the nuclei of the tumor epithelium present inclusions of a peculiar type. They appear as pale, rounded bodies with a definite contour. Others are indefinite and are very faintly stained. Some appear to be either vacuolated or composed of an aggregation of granules. The relation of these inclusions to the nuclear structure is peculiar. A continuous membrane surrounds them which is similar in most respects to the nuclear membrane. This is either applied directly to the surface of the inclusion or it encloses a perfectly clear spherical space with the red stained body in its

* Read in the Section on Pathology and Physiology of the American Medical Association, at the Fifty-seventh Annual Session, June, 1906.

center. The inclusions, although numerous in the tumor epithelium, are not confined to this tissue, but occur also in the connective tissue cells of the stroma and have been observed in many instances in the organs of other mice.

The supporting tissue of the tumor proper is small in amount and forms a very delicate structure. The thin plications and septa on which the epithelium grows are composed of both fibrous and elastic tissue. The latter element is present in larger amount in the tumor than in the normal lung. At one portion of the periphery of the tumor its epithelium is found growing along the thickened walls of the alveoli of the lung. The limits of the tumor are not so well defined here as elsewhere. An isolated group of tumor cells is found at one point in the lung tissue growing on the alveolar walls. It is apparent that the tumor extends not only by uniform internal expansion, but also by the growth of epithelium over the surfaces of the alveoli. The interior space of the tumor is filled in places with finely granular material, in places with clear fluid containing a few mononuclear cells. Next to the epithelial surface are found rings similar to those found in the tubules of the kidney. Since the tumor epithelium is found growing on the surfaces of alveoli, it is probable that air has free access at least to certain portions of its substance.

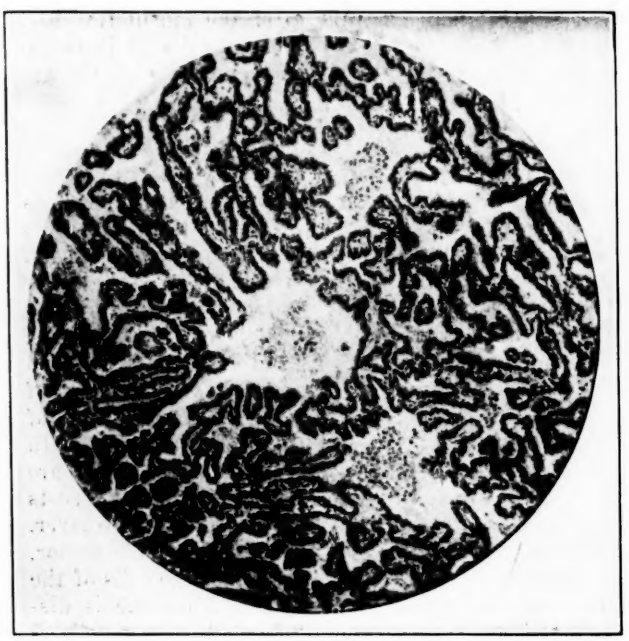


Fig. 1.—Primary carcinoma of lung.

Within the tumor just beneath the central depression is a mass of connective tissue which apparently replaces an older portion of the tumor. This mass consists, in part, of thick bundles of degenerated connective tissue, in part of loose reticular tissue, in which are large numbers of large connective tissue cells. Special staining brings out a considerable amount of elastic tissue.

The adjoining tumor epithelium presents various retrograde changes. In many places the layer is extremely thin and large surfaces are found denuded of epithelium. Within this mass of connective tissue are large cystic cavities from which the epithelium lining has almost wholly disappeared. The epithelial cells where they persist may be flattened and compressed in clumps or disassociated and irregular. The growth of connective tissue has surrounded groups of epithelial cells and there are many multinucleated cells included within it, which are of epithelial origin. It seems probable this scar-like mass of connective tissue represents, on account of its central position, a reaction following a retrograde process in the older portion of the tumor.

The secondary nodules in the lung are similar in character to the primary growth. The reaction about them varies greatly. About one nodule, 2 mm. in diameter, the lung tissue presents no change whatever. About other smaller nodules there are collections of mononuclear cells and there is marked increase in connective tissue over a wide area. A small nodule situated near a bronchus represents growth along the route of the blood vessels.

The air spaces of the upper portions of the same lobe of the lung contain many mononuclear cells the origin of which it is difficult to account for, unless they represent alveolar epithelium. In places alveoli are tightly packed with these cells, which vary greatly in size. The larger ones are vacuolated, probably containing fat.[1] There is considerable emphysema in a portion of the lung adjacent to the primary tumor.

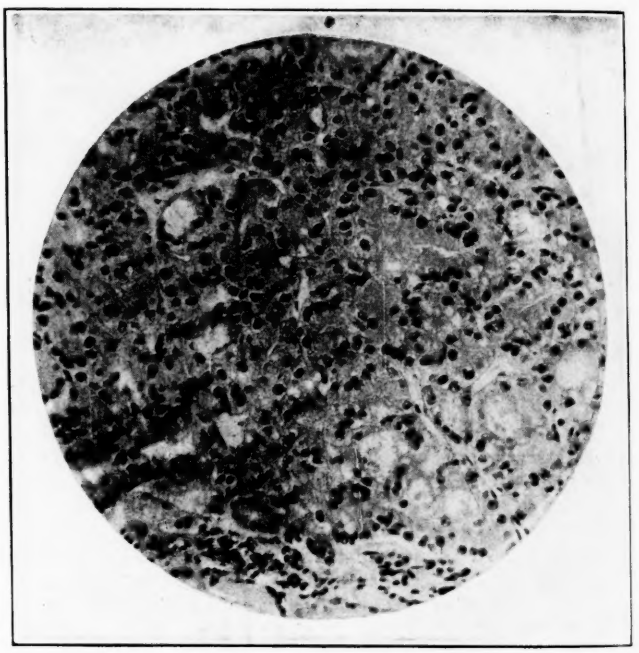
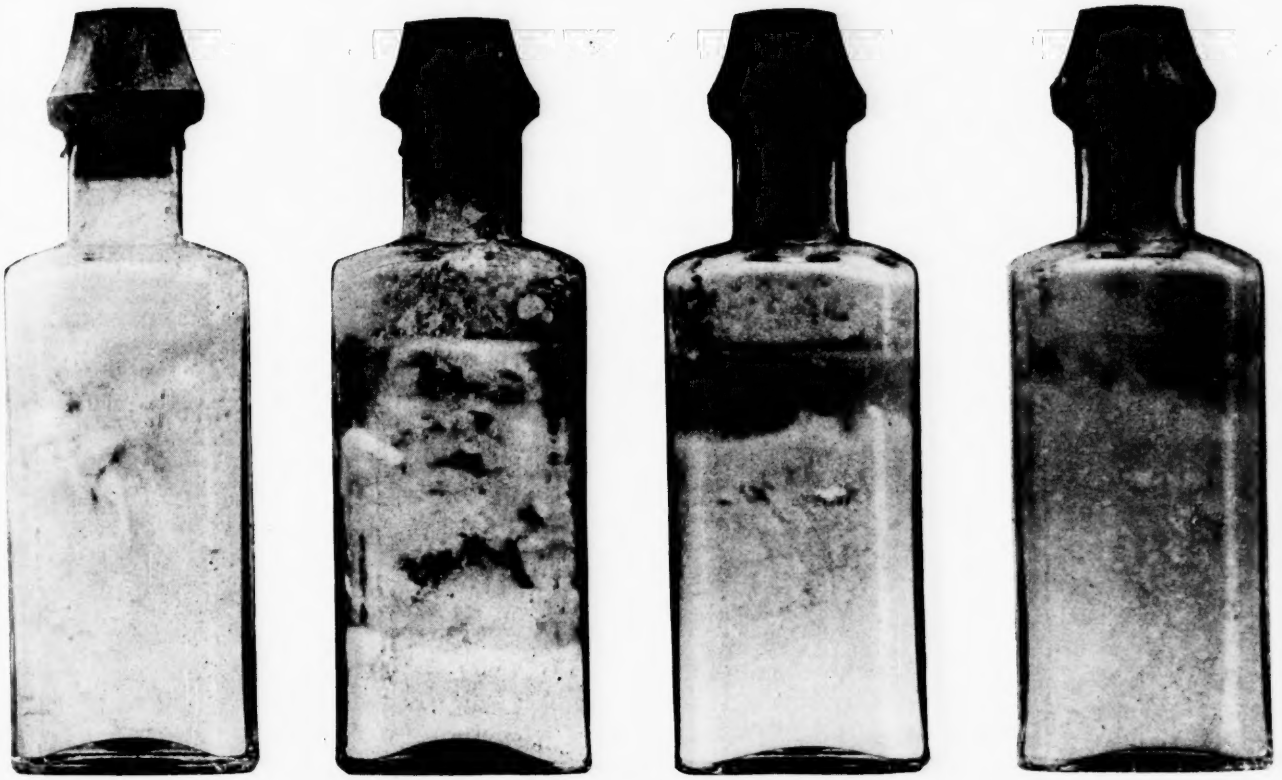


Fig. 2.—Adenoma of kidney.

THE PRIMARY KIDNEY TUMOR.

The nodule observed in the kidney of this mouse is found to consist of irregularly arranged epithelium with staining affinities closely resembling those of the convoluted tubules (Fig. 2). The nodule is sharply defined and distinct from the kidney substance. It extends through the entire thickness of the cortex and bulges slightly from the surface of the kidney. The epithelium

1. Haaland has described nodules arising from the epithelium lining the alveoli in the lungs of mice inoculated subcutaneously with tumors. The collections of cells found in the lung in this case have a close resemblance to the nodules described by Haaland. It does not appear to me that these collections of cells represent a form of new growth.



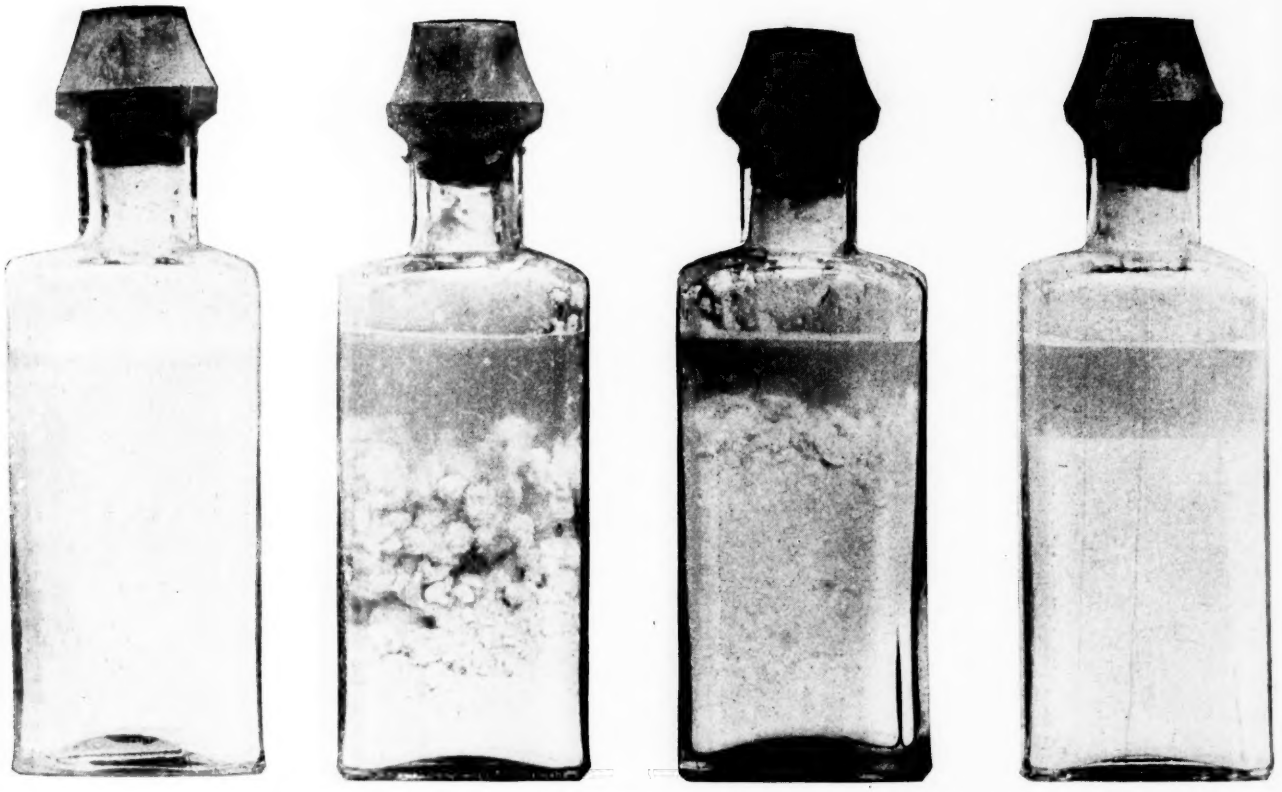
MILK WITH NEUTRAL GASTRIC SOLUTION AND HYDROCHLORIC ACID:

Fig. 1.—HCl 0.1 per cent. Fig. 2.—HCl 0.2 per cent. Fig. 3.—HCl 0.3 per cent. Fig. 4.—HCl 0.4 per cent.

MILK WITH SODIUM CITRATE, NEUTRAL GASTRIC SOLUTION AND HCl:

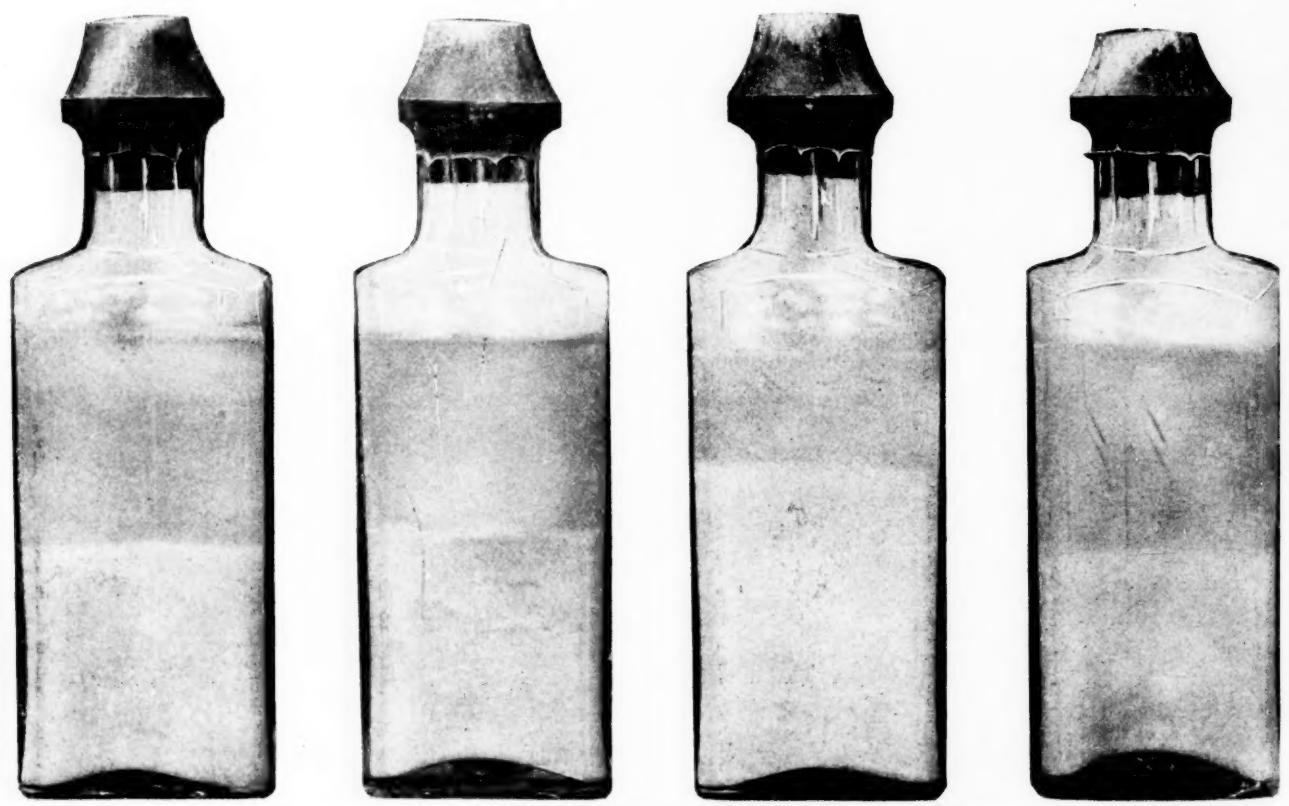
Fig. 5.—HCl 0.1 per cent. Fig. 6.—HCl 0.2 per cent. Fig. 7.—HCl 0.3 per cent. Fig. 8.—HCl 0.4 per cent.

ILLUSTRATING ARTICLE OF MR. ENGLAND



MILK WITH TABLE SALT, NEUTRAL GASTRIC SOLUTION AND HCl:

Fig. 9.—HCl 0.1 per cent. Fig. 10.—HCl 0.2 per cent. Fig. 11.—HCl 0.3 per cent. Fig. 12.—HCl 0.4 per cent.



MILK WITH CEREAL DECOCTION, NEUTRAL GASTRIC SOLUTION AND HCl:

Fig. 13.—HCl 0.1 per cent. Fig. 14.—HCl 0.2 per cent. Fig. 15.—HCl 0.3 per cent. Fig. 16.—HCl 0.4 per cent.

ILLUSTRATING ARTICLE OF MR. ENGLAND

composing the tumor is columnar and in places is apparently ciliated. In portions of the nodule the epithelium has a tubular arrangement, while in other portions the growth is very irregular. Extending about a portion of the nodule there is a flattended cavity, making it appear probable that the growth has originated from the epithelium lining cyst. Near the surface of the nodule is a mass of eosin-staining material consisting chiefly of dead epithelial cells. There are several long-pointed crystals in this material.

The kidney proper presents marked changes. Many of the tubules are dilated with dense, refractive, homogeneous material, in some instances staining with the basic stain, in others appearing yellowish and unstained. There are also interstitial changes in the cortex with increase in connective tissue and occasional groups of lymphoid cells. The cortex is much thinner than normal and scattered throughout its substance are cysts of various sizes lined with swollen epithelium.

FEATURES OF INTEREST.

The tumors in this case present several features of interest. The fact that no cells were found in mitosis in the tumor of the lung seems rather remarkable and may account for the negative results of the inoculations. The appearance of a small cyst at the site of inoculation in one mouse is of little significance on account of its failure to continue growth. There is also a possibility that this cyst resulted from the displacement of epithelium in the trauma of the inoculation, but this result has never occurred in a large series of similar inoculations employing the same technic. In view of the opaque appearance of the tumor and the lobe in which it grew and the absence of blood microscopically, it seems very probable that the blood supply to this lobe was cut off at a time just prior to the animal's death, perhaps being the direct cause.

The nuclear inclusions are not without interest. If they present the result of retrograde changes they are important in the analogy which they bear to cancer inclusions in general. Their non-specificity is clear in that they occur in other tissues and in other mice without tumors. The tumor found in the kidney is of another type and bears no relation to the tumor of the lung.

SUMMARY.

1. Two non-related primary tumors, an adenocarcinoma of the lung and an adenoma of the kidney, were found in an old uninoculated mouse which had been kept apart for breeding purposes.

2. Inoculation of other mice with the tumor of the lung resulted negatively.

3. Nuclear inclusions numerous in the tumor of the lung are not regarded as specific, since they are found occasionally in the tissues of other mice.

Pollakiuria in Liver Affections.—Wasserthal observed pollakiuria in a case of cirrhosis of the liver. The patient had to urinate every twenty minutes, especially at night. This caused insomnia. Hot baths gave him three or four hours of rest. The amount of urine in twenty-four hours was 2,000-3,000 c.c. without any pathologic properties. Artificial distension of the bladder with ʒvii of a solution of boracic acid was well borne, and the solution was well retained. The pollakiuria in this case was evidently due, not to the so-called "irritable bladder," but to some peculiarities of the more or less concentrated urine, as well as to an abnormal amount of ammonium and sarcolactic acid.—*Vrach. Gaz.*, No. 16, 1906.

THE USE OF SODIUM CITRATE AS A MODIFIER OF COW'S MILK.

FROM A CHEMICAL AND PHYSICAL POINT OF VIEW.*

JOSEPH W. ENGLAND, PH. G.
PHILADELPHIA.

The use of sodium citrate with cow's milk, first recommended by Wright (1893) and later by Poynton (1904), Variot (1904), Vanderslice (1905) and Shaw (1906), has attracted considerable attention, the claim being made that it furnishes an exceedingly valuable method for the treatment of proteid-indigestion and the vomiting of chronic gastric catarrh.

It is entirely apart from the purpose of this paper to discuss the therapeutic aspects of the subject, the purpose being only to consider the chemical and physical facts in relation thereto.

The chemical ground has been taken by the earlier investigators that the addition of sodium citrate to milk resulted, on contact with the gastric juice, in the decomposition of the calcium-casein of the milk, with the precipitation of insoluble calcium citrate, and the separation of the casein in a more flocculent form than ordinarily obtains. But Shaw's experiments have clearly demonstrated that such is not the case. He treated milk with sodium citrate solution, filtered the mixture through asbestos filter paper, by means of a suction pump, and dried and ignited the filter; then weighed the residual ash. In no instance did he obtain an appreciable amount of ash, and, hence, no precipitation in a chemical sense occurred. He believes that some unknown and undetected action or combination takes place between the sodium citrate and the calcium-casein, but advances no theory.

What is the nature of this action or combination? Is it a chemical or physical one, or both? Shaw has shown clearly that the calcium-casein combination is not changed in the reaction. What other chemical reaction could take place? When sodium citrate solution is brought in contact with hydrochloric acid, it would seem very possible that the stronger inorganic acid would displace the weaker organic acid, from the salt used, and form sodium chlorid and free citric acid. Such a reaction would be a most logical one, chemically; and, if such is the case, it would follow that the value of sodium citrate, as a milk modifier, is not dependent on the sodium citrate, but on the sodium chlorid and free citric acid formed when the sodium-citrated-milk comes in contact with the gastric juice.

That such a decomposition takes place, is indicated by the following chemical reactions. When a slightly warmed solution of sodium citrate is acidulated with hydrochloric acid and shaken and then has some freshly precipitated strontium carbonate added to it, a milky white precipitate of strontium citrate immediately forms at the surface of the liquid, and falls to the bottom of the container. The reactions are in two stages, as follows:

(1) $Na_3C_6H_5O_7 + 3HCl = 3NaCl + H_3C_6H_5O_7$; and then,
Sodium citrate — Hydrochloric acid — Sodium chlorid — Citric acid

(2) $2H_3C_6H_5O_7 + 3SrCO_3 = Sr_3(C_6H_5O_7)2 + 3H_2O + 3CO_2$
Citric acid — Strontium carbonate — Strontium citrate — Water — Carbonic acid gas

This precipitation of insoluble strontium citrate, formed by the neutralization of insoluble strontium carbonate, shows that there is free citric acid in the solu-

---

* Read in the Section on Diseases of Children of the American Medical Association, at the Fifty-seventh Annual Session, June, 1906.

tion, and not free hydrochloric acid, because if free hydrochloric acid be treated with insoluble strontium carbonate, a clear, transparent solution of soluble strontium chlorid is formed, according to the following reaction:

$$2\,HCl + SrCO_3 = SrCl_2 + H_2O + CO_2$$

Hydrochloric acid — Strontium carbonate — Strontium chlorid — Water — Carbonic acid gas

That the milky precipitate formed is not an excess of insoluble strontium carbonate was proved by adding a quantity of strontium carbonate insufficient to neutralize all the free acid, so that the solution remained slightly acid.

It may be claimed that there is free hydrochloric acid in the mixture, and that this is first neutralized by the strontium carbonate to form soluble strontium chlorid, and that this latter is then precipitated by the sodium citrate. That such is not the case can be very clearly proved by physiologic experimentation, that is, a solution of sodium citrate in water has the cooling taste of the salt which is absolutely not "salty," while the same solution acidulated with hydrochloric acid and warmed to body-temperature for five minutes is unmistakably "salty" in taste.

At the meeting of the Section this morning, Dr. A. C. Cotton reported the theory suggested to him by Prof. Jerome Salisbury that, possibly, sodium citrate modified milk by decalcifying the calcium-casein, forming sodium-casein and insoluble calcium citrate, and that the latter was dissolved by the sodium-casein. This is essentially the view of Poynton except that, in addition, it is held that the calcium citrate is made soluble by sodium-casein, and thus kept in solution.

It is a well-known fact in chemical analysis, and one that is used to differentiate citrates from tartrates, that the calcium salts, in the presence of soluble citrates, precipitate calcium citrate only when the solution is *boiled*. While calcium citrate is practically insoluble in water, it is slightly soluble, though far less soluble in boiling water. In addition, if the milk is thus changed, a part or all of its casein should be dissolved, as sodium-casein is water-soluble; and this, apparently, is not the case. But, if so, what chemical change takes place when the sodium-casein comes in contact with the hydrochloric acid of the gastric juice? Clearly, the formation of sodium chlorid and insoluble casein.

In further demonstration I have made a series of experiments with milk and various reagents, and present a score or more of specimens of different combinations. The first four specimens were prepared with milk and varying percentages of hydrochloric acid (0.1, 0.2, 0.3 and 0.4 per cent.). In the first specimen, only a part of the casein has been precipitated by the acid; in the second and third specimens the curds were tough and cheesy, as they were also, in the fourth specimen. But in this last, and to a slight degree in the third, the curds are more or less broken up by reason of the excess of acid over and above the amount required to precipitate the casein.

In the next two specimens the milk was treated with a gastric solution (made by glycerin extraction from the fresh healthy hog's stomach, by Fairchild Brothers and Foster, New York), which was slightly acid, and not with a rennet solution, as used by Shaw. The gastric solution contains both the proteolytic and clotting enzymes, while the rennet solution contains the clotting enzyme only, or chiefly. Hence, the former is a better representative of the actual gastric conditions that obtain on feeding milk.

Pepsin occurs in the gastric juice of both adults and new born infants. This condition is peculiar. "While in a few herbivora, such as the rabbit, pepsin occurs in the mucous coat before birth, this enzyme is entirely absent at the birth of those carnivora which have thus far been examined, such as the dog and cat."[1]

The fifth specimen was treated with neutral gastric solution; there was a thickening, but little or no curdling; in the sixth specimen, the gastric solution used was slightly acid, and abundant curds were produced which, later, shrunk in size and left clear whey. When the milk was treated with a neutral or faintly acid rennet solution, it curdled, more rapidly in the acid condition than in the neutral.

The susceptibility of enzymes to changes in environment or physical conditions is remarkable. Rennet, as Green[2] states, in his most interesting and instructive work, is active in neutral or in faintly acid or alkaline solutions, but the presence of only a little more than the optimum quantity of either acid or alkali speedily destroys the enzyme at the ordinary temperature. Hammarsten found that clotting occurred most rapidly when a faintly acid extract was used, and Ringer has confirmed the observation, care being taken that the acid was added in an insufficient quantity to precipitate the casein. The clotting was not due to the action of the acid on the casein, as the addition of the same amount of acid without the rennet produced no effect on the milk. The study of the actions of acids, alkalies and salts on albuminoids is a most interesting subject, but one that can be considered here only most briefly. It may be of interest to quote the following statement:[3]

Recent researches have shown that the albumins of the blood have no real acid-combining power or alkali-combining power, as has been thought. In other words, there are no acid-albuminates or alkali-albuminates in a true chemical sense, such as one would liken to the union of an acid with an alkali. Albumins may loosely combine with acids or alkalies in weak solutions without change of properties, but such combinations are apparently more physical than chemical, more intermolecular than interatomic. By the action of strong alkali solutions, the albumins are converted (with the elimination of nitrogen as ammonia and sulphur as alkali sulphid) into modifications called alkali albuminates, but these are clearly the products of disrupted molecules, and radically different from the original molecules. In a somewhat similar manner these so-called acid-albuminates may be obtained with albumins and acids (but without the elimination of nitrogen or sulphur), together with albumoses and, sometimes, peptones; the nature of the products varying with the temperature and strength of the acid used.

The albumins possess some very interesting physical features. The white of an egg (the albumins of which are very closely related to the albumins of blood plasma and its globulins to serum globulins) consists of a frame-work of thin membranes enclosing a yellowish albuminous liquid of light density. Its viscosity is due to its membranes. It is always alkaline in reaction. Its albuminous bodies are mixtures of albumins and globulins together with a mucin. The albumins are soluble in water. On diluting white of egg with water, the globulins separate as a glairy mass, and on diluting it with four volumes of water, the mucin is precipitated. I have observed that if to 25 gm. of the white of an egg sufficient sodium chlorid and water be added to make 100 c.c. of a 0.6 per cent. solution of NaCl, the globulins and mucin are brought

1. Hammarsten, Mandel: "Physiological Chemistry, 1900, p. 260.
2. "Soluble Ferments," 1899, p. 238.
3. England, Joseph W.: "The Reactions of Albumin with Acids and Alkalies," Am. Jour. Pharmacy, 1903, p. 510.

immediately into solution, and a transparent solution results. This is a remarkable fact, especially if organized material has been made to yield a transparent solution by a change in the physical condition of the solvent. If the solution be saturated with sodium chlorid, the globulins are precipitated.

The proportion of six parts to the thousand of sodium chlorid in water corresponds in strength with that of physiologic saline solution, and the valuable therapeutic results following the injection of this solution into the body, in certain pathologic conditions, is apparently due to the fact that the saline solution not only dilutes the poisons in the blood by increasing the volume of blood plasma, but makes this increase under normal physical conditions whereby the globulins and mucin are kept in solution, and not under abnormal physical conditions such as obtain with the injection of water alone. In health, the amount of sodium chlorid in blood plasma is remarkably uniform (six parts to the thousand). So closely is the rule observed that with food containing an excess of sodium chlorid, the latter is quickly eliminated by the urine, and with food poor in chlorids, the volume of blood first decreases, but increases after taking chlorid from the tissues. The secretion of chlorids by the urine is correspondingly diminished.

The next four specimens (Figs. 1, 2, 3 and 4) were made with milk, neutral gastric solution and varying proportions of free HCl (0.1, 0.2, 0.3 and 0.4 per cent.). The curds formed were analogous in appearance to the acid curds, but somewhat gelatinous in consistency. Shaw states that the acid curd is chemically different from that produced by rennet. The specimens shown in Figures 5, 6, 7 and 8 were made with milk, sodium citrate and gastric solution with varying amounts of free HCl (01, 0.2, 0.3 and 0.4 per cent.). The curds were gelatinous and superior in physical appearance to those formed by acids and gastric solution. The specimen shown in Figure 5 is barely curdled; that in Figure 6 is strongly curdled; the one shown in Figure 7 is less curdled; the one in Figure 8 is still less curdled and is about equal to that in Figure 5 in appearance. Each is distinct and characteristic, both in the amount and kind of curd produced. The next four specimens (Figs. 9, 10, 11 and 12) were prepared with milk, sodium chlorid and gastric solution, with varying amounts of free HCl 0.1, 0.2, 0.3 and 0.4 per cent.); and each is remarkable in its similarity of appearance to the corresponding one made with milk, sodium citrate and gastric solution.

In fact, the similarity is so striking that, apart from the chemical evidence submitted, one can hardly resist the conclusions that the physical action of sodium chlorid as a modifier of milk is exactly the same as that of sodium citrate; and that sodium citrate acts as a physical modifier, not as such, but as sodium chlorid, by being decomposed by the hydrochloric acid of the gastric juice. Whether or not the free citric acid formed has any therapeutic influence is a therapeutic question. The percentage of free HCl in healthy nurslings ranges from about 0.1 to 0.2 per cent. In adults the percentage is usually calculated to be about 0.2 to 0.3 per cent., but these figures are not based on pure gastric juice, as Pawlow and his pupils have shown that the gastric juice of the dog contains 5 to 6 parts to the thousand, and that of the cat an average of 5.2 to the thousand, of HCl (Riasantzen). According to Verhaegen's researches, "there is no doubt that pure human gastric juice from perfectly healthy persons has a higher acidity than 2 or 3 parts to the thousand."[1] These experiments indicate that the addition of sodium chlorid to milk has, apparently, some physical influence on the proteids of cow's milk whereby they are more rapidly permeated by the peptic ferments and digested, and the presence of sodium chlorid may stimulate also the gastric glands and the outpouring of gastric juice.

It is well known that the extractive substances of meat (which contain sodium chlorid), are the most powerful of chemical irritants in producing gastric juice,[4] and that rennin may be entirely absent in gastric atrophy and in certain chronic catarrhs.

Since, as Shaw points out, sodium citrate as a modifier of milk, is of value only when there is proteid-indigestion and vomiting from gastric catarrh, what is more rational to believe, since the sodium citrate is changed into sodium chlorid by the hydrochloric acid of the gastric juice, than that its action is both physical and chemical.

In the use of sodium chlorid as a milk modifier it is essential that only small quantities be employed, as large quantities inhibit the action of rennin (i. e., larger quantities than 1 per cent. of NaCl), and of pepsin i. e., larger quantities than 0.5 per cent. of NaCl).

The remaining four specimens (Figs. 13, 14, 15 and 16) were mixtures of milk, cereal decoctions, with neutral gastric solution and varying amounts of free hydrochloric acid (0.1, 0.2, 0.3 and 0.4 per cent.). Mechanically, the casein in these mixtures is very much better attenuated than with the salines; being uniformly in fine flakes and diffused through the liquid. Doubtless, sodium citrate or sodium chlorid can be added to these mixtures, if desired, and used in the conditions indicated.

In all the specimens made, the milk (25 c.c.), etc., was digested on a water-bath at a temperature of 40 C., 0.4. c.c. or eight drops of the gastric solution being added, and the mixture heated for five minutes.[5]

In conclusion I would express the opinion that sodium citrate, which is a neutral salt, has no decomposing action on calcium-casein in the cold, but that it does exert no important physical influence on the casein of milk; that, when the citrated milk is brought in contact with the gastric juice, the sodium citrate is decomposed into sodium chlorid and and that sodium chlorid has important physical, chemical and therapeutic properties in the digestion of the proteids of cow's milk, more important, probably, than has been hitherto believed. Whether the free citric acid formed has any more important therapeutic value than the hydrochloric acid of the gastric juice (stimulated in production by the presence of the sodium chlorid) would seem to be very doubtful.

4. Verhaegen: "La Cellule," 1896 and 1897.

5. The same lot of milk was used for each test, and the most striking result of the test was the similarity, in appearance, of the different specimens of the same acid strength, except those made with the cereal decoction; that is, the curds became progressively finer as were used, respectively, hydrochloric acid, gastric solution and acid, sodium citrate, gastric solution and acid, and sodium chlorid, gastric solution and acid. With the cereal decoction, gastric solution and acid, the results were very different in that the curds were uniformly fine irrespective of the acidity, and they were less bulky, showing the largest degree of peptonization, a result doubtless brought about by the extreme fineness of the curd, which permitted more ready penetration by the ferments and more rapid action.

Field for Art in Medicine.—Béliard of Paris calls attention to the lack of modern, attractive pictures dealing with medical subjects and suitable to hang in a physician's anteroom or elsewhere. Every one is tired of the classic Rembrandt's "Lesson in Anatomy" and the like. He suggests that here is a promising field for aspiring artists to paint subjects that appeal especially to physicians. Rich men would buy the originals, while the poorer medical men would be content with reproductions.

PUBLICITY AS A FACTOR IN VENEREAL PROPHYLAXIS.*

PRINCE A. MORROW, A.M., M.D.
NEW YORK.

The association of the idea of publicity with a class of diseases whose distinctive peculiarity is privacy, may seem at first glance somewhat incongruous. Venereal diseases are the diseases which above all others are concealed from public observation; both social sentiment and the code of professional ethics have always protected them from exposure. The motive for concealment is emphasized by the element of shame with which they are invested by popular prejudice, from the erroneous idea that they have their exclusive origin in licentious indulgence. In the popular conception they are essentially *les maladies révelatrices*, affording proof positive or presumptive of immoral relations.

Bearing these distinctive traits of shame, secrecy and immorality it is perhaps not surprising that the conventional attitude toward this class of diseases is the very antithesis of all that is implied by publicity. The public mind is so imbued with the idea of the essential privacy of venereal disease that any suggestion of sanitary control is resented as an invasion of the private rights of individuals.

While it may be true that an individual has the right to use his own body as he pleases, even in the contraction of disease, yet to speak of any infectious disease as private is a contradiction in terms, since every bearer of contagion is a possible source of danger to others. If venereal disease were private in the sense of being always limited to the individual who contracts it by voluntary exposure, the case would be different; unfortunately venereal infection from its capacity of expansion, its morbid irradiation through family and social life, its transmission in full virulence to the offspring and its consequent injury to the productivity and vitality of the race, becomes transformed into a social danger of the greatest magnitude and against which society has the right to protect itself by means of every order.

VALUE OF PUBLICITY.

We may first inquire into the value of publicity in general, and its special adaptation to the prophylaxis of the class of diseases under consideration.

Publicity has come to be accepted as a sort of panacea for all social ills. Recent developments have demonstrated its remarkable value in the correction of certain public, political and commercial evils, especially those which are based on mystery and secrecy. The essential condition of the existence of these evils is the ignorance of the public. It has been found that the best remedial measure is to turn on the light of publicity, and the result shows that there is more corrective force in this enlightenment than in any laws which can be enacted.

From an examination of these abuses it appears that whatever may be the motives which prompt to concealment, the methods by which they are rendered possible are practically the same and their result is to hoodwink the public. One or two specific illustrations may be cited: The methods by which certain great commercial trusts, the oil and beef trusts for example, have been enabled to crush competition and to reap enormous profits, have been through a system of secret rates, of blind billings, of rebates through unlawful combinations with the railways and concealed from the public by a deceptive system of bookkeeping and a fraudulent balance sheet.

The evils brought to light by the insurance investigating committee were made possible by the methods of false entries, by charging to the general expense account or to some supposititious fund (as "the yellow-dog fund"), moneys of the policy holders which had been expended for bribery, corruption or campaign purposes. That these methods were clearly wrong and entirely indefensible is evident from the fact that simply exposing them, was quite sufficient to secure their prompt and unsparing condemnation by the public, and has covered with disgrace those responsible for these evils.

It is to be noted that the men who profited by these secret methods sought to justify them on the grounds that they were conventional and sanctioned by business usage. But exposed to the light of day and measured by the strict standard of business probity, they were found to partake of the nature of dishonesty or crime.

The same formula of mystery and secrecy is practiced by the "patent-medicine" and proprietary medicine trusts. The public is duped by the false branding of goods and by false claims fortified by false certificates of their value. Enlightenment of the public as to the actual composition of these nostrums would at once depreciate their commercial value, and that is why the manufacturers so vigorously fight for secrecy.

MAGNITUDE OF THE VENEREAL EVIL.

We come now to the consideration of an evil which is patriarchal in comparison with these modern evils of mushroom growth. Venereal infection furnishes the most conspicuous example in social history of an evil which flourishes in disguise and darkness and which owes its chief potentiality for mischief to the very obscurity to which it has been relegated by traditional prejudice.

The venereal evil vastly overshadows these modern evils in magnitude and significance as a social danger. The commercial evil affects only a limited class, the venereal peril affects the interests of the race; the one involves chiefly monetary interests, the other involves the health and lives of human creatures; the former threatens business probity and fair dealing, the latter is a menace to the physical and moral welfare of society.

Venereal infection stands as the prototype of evils made possible by ignorance of the public and we can not fail to be impressed with the perfect parallelism in methods employed for its concealment with those responsible for commercial evils. While the object or end in view is different, the methods are similar and the result identical, so far as the public is concerned.

METHODS OF ENTERING THESE CASES IN HOSPITALS.

Our system of medical book-keeping, as exhibited in hospital records, health reports and vital statistics, is not free from misleading entries. A convenient and somewhat elastic medical nomenclature lends itself to this policy of concealment. A vast number of morbid conditions which should be charged to venereal infection are entered under some non-compromising name which does not indicate its real nature. Disease directly caused by gonorrhea and in which the gonococcus may be identified as the pathogenetic agent, are entered in our hospital records as purulent ophthalmia, arthritis, endocarditis, endometritis, salpingitis, peritonitis, etc. Diseases in which syphilis is the essential etiologic factor are entered as tabes, paresis, paralysis, aneurism, etc. These

* Read in the Section on Hygiene and Sanitary Science of the American Medical Association, at the Fifty-seventh Annual Session, June, 1906.

diseases plainly bear the image and superscription of syphilis, but we do not render to Cesar the things that are Cesar's.

The enormous debt created by venereal infection and which humanity must pay in suffering disease and death, is charged to the expense account of general disease. The balance sheet of venereal morbidity and mortality presented to the public in the annual reports of our hospitals, in the reports of the boards of health and the bureau of vital statistics, the only documents accessible to the people, does not correspond with what physicians know to be the true pathologic balance sheet of venereal infection.

The report of the Committee of Seven in New York disclosed the fact that it is not possible to gain from our hospital records or other sources any accurate statistics of the extent of venereal infection in that city. This report states: "We find records of cases, many thousands altogether, in which the sequelæ of gonorrhea and the systemic manifestations of syphilis are received and treated in hospitals but are entered under names which are not recognized by the laity as indicating a venereal origin."

Thus for example: "In one of the eye hospitals there were 136 cases entered as 'purulent ophthalmia,' in all of which the gonococcus had been identified by bacteriologic examination as the pathogenetic factor. In the same hospital there were 38 cases of interstitial keratitis, indubitably of syphilitic origin, but not so indicated on the records," etc.

It would be easy to multiply specific examples illustrating this practice, but the fact is well known that the policy of the governing boards of our hospitals is to exclude all mention of venereal disease from their reports.

The object is not so much to protect the individual from the odium attaching to a shameful disease as to protect the hospital from the reproach of treating such cases. In the out-patient department, for example, the diagnosis of venereal disease is plainly entered as gonorrhea or syphilis, but if the patient is admitted to the hospital the same disease must be entered under some respectable alias which does not betray its venereal origin.

In private practice the concealment of every source of venereal contagion takes on the character of a peremptory obligation imposed by the precepts of the professional code. In the presence of any other infectious disease, the cardinal consideration is to prevent the infection of others, but in the presence of venereal disease, the higher duty of protecting others from infection falls below the duty of protecting the individual from exposure.

It is well known that the health boards, the official representatives of the state, which are charged with the control of all contagious diseases dangerous to the public health, ignore the existence, even, of this class of infections.

This exposure of methods by which it is rendered impossible to obtain accurate statistics of venereal morbidity and mortality which might serve for the education of public opinion is not intended as a criticism, still less as a censure of the motives which underlie the practice. These motives from the professional point of view are not only defensible, but commendable and claimed to be in the interests of the social order. But, irrespective of motive, this policy of concealing a grave peril to the public health is opposed to the first principles of sanitary wisdom. Concealment has ever been the most powerful ally of infectious disease.

It would be just as insensate to endeavor to prevent gambling when the officers of the law carefully concealed every case coming under observation and the courts ignored its existence in the community.

DANGER OF CONCEALMENT.

It may be affirmed that there is no factor of danger to the public health which is so utterly ignored, no peril to society which is so systematically covered up and concealed as venereal infection. Clearly, publicity, applied to venereal diseases, would mark a revolution in social sentiment, an innovation on traditional custom and an entire change in the spirit and practice of the medical profession.

Under these circumstances, is publicity desirable? It may be positively affirmed that publicity is not only desirable but absolutely indispensable to the successful working of any scheme for the prophylaxis of venereal diseases.

It is not necessary to violate the time-honored principles of the professional code in enlightening the public, —the medical secret is confined to the individual—it does not extend to the collectivity.

The aggregate of venereal diseases and its danger to the individual and to society may be exposed without referring to particular cases. Notwithstanding the defective system of recording cases physicians can read between the lines and form an approximate estimate of the extent of venereal infection. This pathologic balance sheet should be translated into intelligible terms and spread before the public so that the educational power of the truth may have full force and effect.

INDIFFERENCE OF THE PUBLIC AND NECESSITY FOR PUBLICITY.

It may be claimed that the public is indifferent, even averse, to this enlightenment. Less than ten years ago the public was indifferent to the dangers of tuberculosis, but it was only necessary to correct the ignorance, the cause of this indifference, and public apathy was at once transformed into a lively, active interest. The public was indifferent to the insurance and other commercial evils referred to until the advent of that pioneer in the reform of modern abuses who bears the inglorious title of the muck-raker.

Now the rôle of muck-raker is considered neither dignified nor desirable, the work of delving in the filth of human weakness and depravity is unsavory, even repulsive; it can be undertaken only from a sense of duty, but the muck is there and needs to be raked. It is not confined to the terrain of prostitution where it originates—it spreads beyond the purlieus of vice and invades the habitations of virtue—even the sanctuary of marriage affords no safeguard against its soilure. It collects about the very sources of human existence, it pollutes the fountains of life; it befouls the sacred function of maternity; its defilement clings to the innocent infant ushered into the world. It is especially needful that the muck of venereal infection should be cleared away from marriage, the breeding place of humanity, so that the springs of heredity may be kept pure and children no longer be deprived of their rightful heritage of vitality, health and vigor.

The public should know that the introduction of venereal infection into marriage constitutes its chief social danger and at the same time makes up the saddest chapter in the martyrdom of women.

If the medical profession should share with the people the knowledge it possesses of the frequency of such in-

fections and their terrible consequence to the health and lives of innocent women and children, of the havoc wrought in the home and family, an awakened public sentiment and an aroused public conscience would no longer tolerate such social infamies. So long as this foul ulcer in the flank of society is covered up and concealed, it will continue to fester and to send its infection through every part of the social body. It must be exposed and laid bare in order to be cured. The medical profession should be deterred by no false sentiment or fastidious nicety from engaging in this work of exposure. The end not only justifies, but dignifies the means.

IS PUBLICITY PRACTICAL.

We may now inquire whether publicity is practicable. What are the most available ways and means of enlightening the public?

At first glance the indications do not appear reassuring. There is a complicity of silence on the part of all the educational agencies of human society in relation to everything pertaining to venereal infection. The ordinary channels of communication with the public—the newspaper press, popular literature and other means of general enlightenment—are closed to this knowledge. The mention even of these diseases is interdicted by the best forms of good society.

Social sentiment holds that it is a greater violation of the proprieties of life publicly to mention venereal disease than privately to contract it. But a sentimental objection based on conventional prejudice affords no valid reason for silence on the part of the medical profession. Sentiment has no place in the counsels of preventive medicine—when sentiment is opposed to sanitation it must be disregarded. Now as to ways and means: It is evident that we can not create educational agencies, we must utilize those already existing.

First of all, we must recognize that the public can not be reached to any effective extent so long as we discuss these questions, so vital to the interests of society, behind closed doors; they must be brought into the open, *coram publico*. John Stuart Mill declared that: "the diseases of society can no more be checked or healed than those of the body without publicly speaking of them." Not only must we speak openly, but we must call things by their right names; we must speak plainly but sanely, clearly but cleanly, scientifically but simply. There is no need of sensationalism, the plain unvarnished truth is sufficiently sensational, without embellishment or exaggeration. This plain speaking should be devoid of any quality of offensiveness, it should be tempered by tact, discretion and a sense of the fitness of things.

SPECIFIC METHODS OF PUBLICITY.

Time will permit only the briefest reference to specific methods of publicity. Since the newspaper press, the most powerful of all agencies of publicity, is not available, at least for the present, we must have recourse to other agencies of popular enlightenment—pamphlets, tracts, conferences, lectures, etc. Meetings organized by medical societies for the free discussion of these subjects and to which the public is invited constitute a most valuable means of propagandism.

Another valuable agency in this educational campaign would be the establishment of a journal of popular medicine, devoted to the study and prevention of all communicable diseases, especially those spread in the ordinary relations of social life. A knowledge of the source, the means of dissemination, the modes of contagion and the measures to be taken to prevent the spread of these diseases, should be given in simple language, intelligible to laymen. In such a publication the study and prevention of venereal infection would enter naturally as one of the most important of the group of communicable diseases. Such a journal has already been projected and under auspices which, it is hoped, will insure success.

The brief experience of the American Society of Sanitary and Moral Prophylaxis in this educational work has shown that thousands of serious-minded members of the laity are already thoroughly aroused to the importance of this work. The opportunity seems to be propitious for inaugurating a general campaign of education; the public mind is receptive and ready to assimilate this knowledge. We should take advantage of the current of social reform which is now sweeping the country and which sets so strongly in the direction of publicity in all matters affecting the interests of the public.

66 West Fortieth Street.

THE DUTY OF THE MEDICAL PROFESSION TO THE PUBLIC IN THE MATTER OF VENEREAL DISEASES, AND HOW TO DISCHARGE IT.*

W. J. HERDMAN, M.D., LL.D.
ANN ARBOR, MICH.

Ignorance is the condition which alone makes slavery and oppression possible.

This applies to the tyranny of disease quite as much as to the unjust dominion of man over man. Nothing should stand in the way of emancipating mankind from the tyranny of disease and especially of those diseases that are most destructive and wide-reaching in their effects.

Physicians alone know the truth as to the widespread ravages of venereal diseases and on them rests primarily the duty of disseminating that truth so effectually that the way of escape from their dire effects may be made plain; and adequate safeguards for the protection of the innocent may be created.

WHERE AND HOW SHOULD THIS TRUTH BE MADE KNOWN?

So self-evident are the three leading propositions that head this paper that they need no discussion. The consensus of medical opinion the world over declares that the time is at hand for adopting such measures as will be most effective in arresting the hideous ravages of syphilis and gonorrhea. In order to accomplish this we must go to the root of the matter and, throwing aside all false barriers of prudishness, mock modesty and misguided sentiment, build up rational and enduring defenses such as a right and sufficient knowledge of the nature of these diseases and the modes of their propagation alone affords. It is most assuredly imperative, if this knowledge is to be placed where it will do the most good, that it be given to those who are in the greatest danger from such diseases, and in time to serve as a preventive.

The members of the medical profession throughout the civilized world have at length awakened to a sense of their duty as guardians of the physical welfare of mankind in its broader sense, not only in respect to the cure of disease, but also as to the prevention of it.

---

* Read in the Section on Hygiene and Sanitary Science of the American Medical Association, at the Fifty-seventh Annual Session, June, 1906.

The futility of attempts to check the ravages of many diseases by confining effort solely to the individual victim of them, the physician has discovered and made so apparent to all that society claims and exercises the right to regulate the conduct of its members in so far as public sanitation and private sanitation may require it. This principle is now so well established that the pathway for its application, in any direction, needs but to be made plain and society will follow it, no matter what the obstacles. Long-established custom, prejudice, sentiment, all will go down before the more fundamental right of self-protection from real and grave danger.

In initiating a propaganda, therefore, against the ravages of venereal diseases the medical profession is but discharging its proper duty and showing itself worthy of its high mission. That mission in this instance is to disclose the pathways of invasion of these formidable enemies of man and to make plain the ravages they commit, leaving it to the parent, the teacher, the pastor and the legislator to devise the proper means for protection and defense.

But in order to carry on the campaign effectually there must be no dissension in the ranks of those who enlist to fight its battles. All should be agreed as to the fundamental truths which they are seeking to establish, otherwise the warfare will be a half-hearted one.

Since it has fallen to the medical profession to take the initiative in enlightening the public regarding the dangers that surround and threaten them from the prevalence of these diseases, the information furnished should be as accurate as possible. All statements from medical sources made with a view of stimulating the public to action should receive critical supervision and go forth stamped with recognized authority.

MISCONCEPTIONS AND FALLACIES.

At the very foundation of this proposed structure lie certain quicksands which must be removed before we can build securely.

These consist of certain misconceptions or fallacies which have a strong hold on a large number of minds, both medical and lay, and which until they are removed will exercise a retarding if not a reactionary influence on the best endeavors put forth to create enduring barriers against these evils.

The first of these fallacies is the medical or physiologic one that continence in sexual life is in any way injurious to him or her who practices it.

The second is the social one that permits one standard of recognition for the man and another for the woman who has fallen from virtue.

And the third is a fallacy of method, built on a misconception of the factors entering into the problem, and consists in a prevalent belief that a breach of moral law with its evil effects both moral and physical can be repaired by any system of legal restraint or license directed to the physical effects alone, especially since such legal control must of necessity be both partial and incomplete.

It is scarcely to be expected that much will be accomplished for this new movement by any whose minds are clouded by one or other of these misconceptions.

Such beliefs are not consistent with high ideals of manhood and womanhood; and only those imbued with such ideals can be relied on voluntarily to sacrifice personal comfort and convenience and to initiate a contest against the most formidable forces for evil that man has yet encountered.

METHODS OF DISSEMINATING KNOWLEDGE.

It must be a most gratifying and hopeful sign to those who hold dear the honorable traditions of the medical profession and expect for it a larger measure of usefulness to humanity in the future to see its leading members everywhere giving voice, influence and personal effort to check the remote causes of disease, being prompt to enter into association and to adopt the most effective measures to attain this purpose.

The more thorough the organization the sooner will we reap beneficial results, and the present machinery of the American Medical Association affords an excellent vehicle for prompt and efficient action in getting the needed knowledge to the public, of all ranks and conditions of life, in the most effective ways. First, as has been proposed, there should be a standing committee of the American Medical Association as a central nucleus charged with the duty of collecting statistics, gathering and disseminating campaign literature, keeping in affiliation and co-operation with foreign organizations of similar purport, suggesting and aiding in securing needed legislation.

Each state medical society should have its standing committee charged with corresponding duties, and so on to the county societies.

Through these county organizations, or the councilor district organizations representing them, the medical profession the country over with great force and effectiveness can bring the gathered information directly to the knowledge of the people through the medium of public meetings judiciously arranged.

It will soon be discovered by the committees chosen to do this work what persons are the best fitted to present tactfully and effectively to the lay mind the truths that we need to impart. And the leaders in philanthropic movements in each community can be entrusted with the duty of devising the plans for disseminating this knowledge best suited to their local conditions.

Thus a host of capable workers will soon arise in each state, and in every councilor district of the state, who can be called on to lend their aid as circumstances require their services.

There are many suitable channels already at hand for the distribution to the public of the facts they need to know concerning these diseases.

It is the proper function of our state and municipal boards of health and local health officers to disseminate such information, and while there has been a hesitancy on the part of these officials to initiate a campaign of instruction on a subject which respectable people have hitherto dared mention only with bated breath, with the sanction and backing of the medical profession these officers can be counted on to assume the duty.

By this means circulars of information and instruction can be distributed and state laws and municipal ordinances, designed to limit the spread of such diseases and to check their evil effects, can be kept constantly before the public mind so as to insure their enforcement. The medical inspection of schools and of school children, with the precaution it creates against the spread of contagion of these and other diseases and the enlightenment it gives to parents and teachers as to the nature of these diseases among others, is another most effective channel of instruction.

The city physician and sanitary inspector, when well chosen, are in a position to aid greatly in the work by

bringing such sources of contagion to the knowledge of those whose duty it is to enforce the law and ordinances designed to suppress them.

Members of boards of education, superintendents, principals and teachers of schools, both public and private, should all be well informed as to the nature of these diseases and the dangers which attend them and their interest and co-operation secured in efforts to check their ravages.

Effective work can be done through church organizations, young peoples' Christian endeavor societies and mothers' meetings.

The young men's and young women's Christian associations are admirable channels for the spread of such knowledge, and the possibilities which the Salvation Army has for reaching these sources of evil directly and effectively must not be overlooked.

In manufacturing, commercial and industrial cities where large numbers of men and women are employed, both young and middle-aged, the interest of employers can usually be enlisted to afford an opportunity for such instruction to be given when it is not possible for these people to be reached through other channels.

In all of this work the physician who knows the facts and can speak from experience must take the lead, and it is in work such as this that the woman physician, of the right sort, will find a sphere of activity and great service peculiarly her own, for separate instruction to the sexes, both young and old, will need to be given plainly, but tactfully, and by those who have seen at close range the dangers they portray and whose word carries conviction because spoken with authority. Broad, disinterested benevolence, such as rightly represents and adds dignity to a liberal profession, should characterize the persons chosen for this work. It is not for the self-seeker nor the unsympathetic, but for those who know what it means to labor for the unperishable riches, and of these workers the medical profession has an abundant share.

In the brief sketch here given I have but presented in outline the plan of campaign already adopted in the state of Michigan. The State Medical Society of that state created, a year ago, a standing committee charged with the duty of bringing to the knowledge of the public the facts that need to be generally known, and referring to the origin, spread and dangers of venereal diseases. This committee was authorized to enlarge its number to twenty, many of whom are chosen from the laity. One most successful meeting has already been held in Detroit, at which it was fully demonstrated that the most influential citizens are quick to respond and follow the lead of the physicians in this work. From this committee of twenty, subcommittees on publication, education and legal enactment have been organized and are at work. On these committees are physicians, lawyers, ministers of several denominations, business men and women devoted to philanthropic and charitable undertakings. There is no question but that which we have demonstrated, through the work of this organization in Michigan, serves but to indicate the general temper throughout America on this most important matter, and it needs no prophet to foresee how fruitful of good results such a systematic and thorough plan of enlightenment against this grave evil will soon be able to accomplish.

THE DUTY OF THE STATE TOWARD VENEREAL DISEASES.*

HENRY D. HOLTON, A.M., M.D.
BRATTLEBORO, VT.

In discussing the duty of the state in relation to both syphilis and gonorrhea, we must recognize that, under the present status of public opinion, the state can accomplish very little, either by the enactment of new laws or by giving additional authority to boards of health; that before we seek aid from the state there must be created a public sentiment which will sustain action by authority, but there must also be a strong demand for state interference.

This can only be brought about by an educational movement, which shall begin in the home and continue in the high and preparatory schools and college.

The parents should explain how the race is perpetuated, the sacredness and responsibility of the relations of parents and children, the great moral and physical dangers that attend on the abuse of those functions, and that continence is not incompatible with health. The teacher or physician should enlarge on these lines and point out the diseases that result from impure intercourse; that all clandestine embraces are dangerous, as the individual, male or female, who enters into such relations, be it clandestine or otherwise, will sooner or later become infected; and either of the diseases thus acquired are of the most serious character, of long duration, often followed by the most disastrous results, ending in death or chronic invalidism, and many times by deformity. It is quite possible that the profession should first be educated along the line of duty. Physicians are familiar with the loathsome and disastrous nature of venereal disease; of the danger of its communication to innocent persons; in fact, of the great menace it is to our civilization. Yet in the past we fear that it has been regarded too lightly by some; others have turned away such cases with disgust. In both cases, the great duty of attempting to stay its destruction and progress has not been recognized or at least acted on.

In countries across the sea statistics have been gathered, showing the prevalence, how provided for, and the means used to prevent its spread. In a certain way, these are of value to us, yet the difference of our form of government and social conditions is such as seriously to impair their usefulness when we attempt to draw deductions or to formulate regulations for their control.

The information necessary to carry on successfully the work of prevention should be the first work of any organization that has in view the control of these diseases.

Without going into details it will be recalled that in a joint meeting of this section and that on cutaneous medicine, in 1904, a committee reported on this subject, recommending the sending to every physician a request for certain statistical information, which it was hoped might be useful in the further consideration of this subject.

These communications received the approval of the state and provincial boards of health, and they are here inserted:

* Read in the Section on Hygiene and Sanitary Science of the American Medical Association, at the Fifty-seventh Annual Session, June, 1906.

VERMONT STATE BOARD OF HEALTH.

OFFICE OF THE SECRETARY, BRATTLEBORO.

Dear Doctor:—The enclosed leaflet is issued in the interest of prevention of venereal diseases. It is for you to give each patient who consults you suffering from either gonorrhea or syphilis. It has been prepared so as to be concise and in language to be understood by everyone. This, we hope, will cause it to be read by those to whom it is handed. It will introduce the subject of prevention, thus enabling you to give your patient further information of the extent of this scourge. Additional copies of this leaflet can be had on request.

It is estimated that 80 per cent. of all deaths from pelvic diseases in women are due to gonorrhea. Twenty per cent. of all blindness is due to gonorrheal infection of the newborn. Fifty per cent. of all involuntary childless marriages are caused by gonorrhea of the female organs of generation, of which 45 per cent. are due to marital infection by men. In this country it is impossible to quote statistics, as they never have been gathered. The committee of fifteen estimated that there were annually 200,000 cases in New York City alone. In Prussia, where they have more reliable data, it has been stated that typhoid fever represents a yearly loss of 8,000,000 marks, while the increased expenses and decreased income caused by venereal diseases amount to 90,000,000 marks annually, an amount which exceeds that caused by tuberculosis. But the financial loss is of minor importance compared with the enormous social changes and consequent social misery.

In view of these startling facts, which indicate the increasing danger to our people, will you not, my dear doctor, aid your state board of health in gaining reliable statistics relative to these diseases, by returning to the secretary each year the following blank with every question answered?

Cases of gonorrhea observed during the year 190.. Male.... Female.... Married.... Single.... Number having children.... Number without children....

Cases of syphilis.... Male.... Female.... Married.... Single .... Number having children.... Number without children....

CIRCULAR OF INFORMATION ADOPTED BY THE CONFERENCE OF STATE AND PROVINCIAL BOARDS OF HEALTH OF NORTH AMERICA.

Issued by the State Board of Health of Vermont.

We hand you this leaflet believing that you would not willingly communicate your disease to some innocent person.

Many fail to comprehend the exceedingly disastrous results that often follow these diseases. Many cases of blindness, complete disability, and not infrequently death results from them. Gonorrhea is one of the most frequent causes of diseases peculiar to women. So serious a menace have these diseases become to the public health that the medical profession and sanitarians in all countries have become alarmed; and are advocating measures for their prevention.

Syphilis (or pox) is especially a disease from which innocent persons may suffer, as it usually produces sores in the mouth or on the lips, hence may be conveyed by kissing, drinking from the same cup, or using anything which has been put to the lips or into the mouth of one affected by the disease.

These diseases are often communicated when the patient thinks he has recovered. Hence marriages contracted at this time of the disease result in much unhappiness, and often in the death of the wife. To protect yourself and others, we earnestly advise the following.

IN THE INTEREST OF PREVENTION OF YOUR DISEASE.

What to do and what not to do, to get well and to prevent giving your disease to any other person.

Follow strictly the advice of your doctor, use no other treatment.

Remember that it takes a long time to entirely recover.

Carefully wash your hands with soap and hot water whenever you handle the private parts.

Do not have intercourse and avoid all sexual excitement until your physician says you are completely cured. Be especially careful not to rub your eyes with your fingers.

Do not allow any person to use any cup, glass, spoon, fork or anything that you have put in your mouth.

Do not kiss anyone or wipe the face of a child with a handkerchief you have used. Always use a separate towel. Burn all cloths or cotton soiled by discharges.

It was then considered desirable to send the circular of information to the principals of preparatory schools and to the presidents of all colleges, with a request that they call the attention of their medical officer to the subject, to the end that it should be presented to the students in their respective institutions. The committee not having funds to defray the expenses of printing and postage, applied to the trustees of this Association, asking that the printing office of the Association aid them, but were refused this assistance. So far as we are informed, these circulars have only been sent out in Ohio, Florida, Minnesota and Vermont.

If all cases were reported to boards of health as other communicable diseases are (without names), so that we could arrive at a fairly accurate estimate of the whole number of cases occurring, the number of each, the manner acquired—whether innocently or otherwise—and the effects on procreation, we should have a foundation on which to base recommendations for prevention. A more accurate recognition and division of the manner of communication, whether from the ordinary courtesan, clandestine embrace, or from entirely innocent sources, is also of importance.

THE WAR AGAINST THE VENEREAL DISEASES IN FRANCE.*

THEODORE TUFFIER, M.D.

Professor Agrégé of the Faculty of Medicine of Paris; Surgeon to the Hospital Beanjou,

PARIS, FRANCE.

The question of venereal prophylaxis is the order of the day in our country; from all sides medical men, statesmen and even literary men are combining their efforts to contend against this scourge. New measures are being studied and our *Société de Prophylaxie,* composed of internalists, surgeons, obstetricians, the most eminent members of the school of law and the principal police officials, meets once a month to consider important matters relative to the subject. This society has been productive of definite results.

The system in use in France is composed of two separate branches—absolutely different—that is, the police and the medical service. Government surveillance is exercised in reference to houses of prostitution as well as to the so-called free prostitutes who are registered at police headquarters. The inmates of all houses are examined once a week, the others are obliged to report to the examiner once in two weeks. A card is given them which shows the absence of every venereal symptom at this visit, and is in effect an authorization to continue their calling. There is also clandestine prostitution, the object of special consideration by the police, which constitutes, strange to say, a third of all diseased women. When arrested, these women are kept in a special hospital—Saint Lazar—until cured.

This system which has been in existence for numerous years is now violently attacked. It is said that an examination made so infrequently is necessarily illusory as regards any benefit. It is claimed that prostitution should be free. The dictum has gone forth: "A free woman on a free sidewalk." The abolitionists in France are represented chiefly by an extraparliamentary constituency. Everybody believes that the system should be modified, and various modifications are being studied.

ACTIVE FORCES IN THIS WORK.

Among the most active forces in the study of this prophylaxis and the practical methods best adapted for its realization must be mentioned the collaboration of Professor Fournier, the world-renowned syphilographer, and Mr. Brieux, a dramatic writer of great talent. They have already done much for the cause, one by his authoritative writings and the other by his theatrical representations, of which "Les Avariés" has achieved a universal recognition. Their program is this: To tell everybody regarding the existence and the danger of syphilis and to increase the facilities for treatment. The education of the people regarding venereal matters is effected by an active propaganda. A series of conferences is established wherever men are grouped together. In the army and navy this is done officially by the medical officers. In great industrial centers, which are the hot-beds of syphilitic propagation, instruction is given

* Translated by Denslow Lewis, M.D., Chicago.

* Read in the Section on Hygiene and Sanitary Science of the American Medical Association, at the Fifty-seventh Annual Session, June, 1906.

and thousands of pamphlets are distributed. For example, "The League Against Syphilis," "The Social Danger of Syphilis," "For Our Sons When Eighteen Years Old," etc., are short articles of some thirty pages, capable of being read and understood by all who are ignorant of medical terms. More than 20,000 copies of these pamphlets have been distributed.

A propaganda of this kind is the only means of reaching the man in France, because here no ordinance, no law can affect one who is tainted (avarié). The soldiers and sailors alone are subject to military regulations and can be placed in a position where they can do no harm until they are free from disease. Unfortunately, the fear of this enforced sequestration causes much dissimulation by all kinds of methods and favors a continuance of infection for a protracted period before the men are finally interned.

It is the woman alone and chiefly that reglementation can affect, but reglementation in her case must, above all things, be humane and legal. If it is impossible to arrest a woman known to be syphilitic, unless she solicits, it is in our power to limit the deplorable effects of her calling by decreeing that no woman shall publicly solicit patronage unless she can show a certificate of health signed by some physician. Unquestionably there is wide latitude in this statement, "some physician," but the responsibility attested by a signature under these conditions is such that we do not believe it is ever given without a full knowledge of the facts.

The propaganda against syphilis, the partial reglementation, these are the first two elements of the new program. The third consists in the increased facilities for treatment, and in this connection there has been considerable discussion as to the advisability of increased venereal therapeutics in special hospitals or in a special service in all general hospitals. The first fact of importance, on which all are agreed, is the recognition of the necessity of more frequent examinations. Fournier and Brieux have insisted on an examination night and morning every day, including holidays. Practical experiments at Saint Lazar and the Hopital du Midi have shown good results. The evening examination, which is for the benefit of those employed during the day, that is, the great majority, results often in the discovery of an increased number of diseased women who are at once removed from the possibility of pursuing their calling, and thus diminish the chance of contamination. A second fact, very generally acknowledged, is that all physicians who make these examinations must be venereal specialists. Such practitioners alone bring to each examination a personal interest which ensures an adequate, competent and necessary understanding of each individual case.

EXAMINING STATIONS.

As regards the location of examining stations, most medical men believe that in connection with all special and general hospitals there should be a dispensary—a special service—devoted exclusively to the venereal diseases.

Such is the new plan, proposed, discussed, elaborated and still the subject of study, which represents in France the result of our efforts against venereal infection. It is only a project, but by its simplicity and its logic it seems destined to rally to its support all of our voters and to secure the approbation of our government. "The right of the question is one of social protection and interest."

WHAT SHALL WE TEACH THE PUBLIC REGARDING VENEREAL DISEASES?*

ALBERT E. CARRIER, M.D.
DETROIT.

It seems to me that the answer to this question should be that required of a witness in a court of law, viz., to tell the truth, to tell the whole truth and nothing but the truth.

It has been our custom in the past to tell a part of the truth only in regard to venereal infections, to apologize for not telling the whole truth, and to cover what we did tell with a coloring that has robbed these affections of their appalling nature. An ounce of prevention is worth a pound of cure, and our profession is evidencing this in its efforts for better sanitary methods, better hygiene, the isolation of contagious diseases, and in educating the masses how to avoid contraction of these affections.

The object sought by these efforts is the reduction of the death rate. The enormous sums of money spent to reduce the death rate, one in a million, is considered well expended, while the labor involved and the sacrifice of health and even life are regarded as necessities. Were sanitary and hygienic methods directed solely to the prevention of morbidity, venereal disease would stand first in demanding attention, but to-day there are thousands of centers of infection against which the public has no protection; no measures have been instituted whereby the masses might be instructed in ways to avoid the contagion of venereal diseases, nor that these affections may be contracted innocently; more than this, these centers are ambulatory, traveling from place to place. In outlining any plan of instruction, conditions must be appreciated in order that our efforts may be along lines of least resistance.

The public is made up of individuals of both sexes, of all ages, of all nationalities, of all religions or none, of the educated and the ignorant, of the affluent and the poverty stricken, of the virtuous and the vicious. Different peoples have different viewpoints of chastity, of purity and morals in general, and our methods of teaching the truth will require modifications to meet these different conditions. Illicit intercourse is wrong; probably 999 in 1,000 know that.

While the province of the physician lies in the prevention and cure of disease, there are times when he must enter the domain of morals also, and nowhere will he find better opportunity for teaching morality than in giving advice regarding the sexual apparatus, for here he can teach purity from the standpoint of health, while the spiritual adviser has less influence, because he teaches that the infringements of virtue are punished in a hereafter, an indefinite time and in an existence that is partly speculative.

There is a woful ignorance among the laity regarding the purposes of the sexual apparatus which needs dispelling. We must teach that these organs are not simply for the elimination of waste products, nor for the simple gratification of an animal passion.

We will need spend little time in attempts to prove illicit intercourse wrong, for that is pretty generally accepted, and there are other fields for us to cultivate that are more promising of results.

The hygiene of the generative organs has had little attention until about the age of puberty; up to this period it has been considered a shameful act to call at-

* Read in the Section on Hygiene and Sanitary Science of the American Medical Association, at the Fifty-seventh Annual Session, June, 1906.

tention to these organs, and the fear has been expressed that there would be danger in so doing, a danger that I can not appreciate. Let us attempt to make respectable the generative organs. I can not see why a child should not be taught the care of the sexual apparatus, as well as the care of the eyes, ears, nose or any other organ. Granted that this instruction is proper, who is to give it and how early in life is it to be given? The latter part of this question can not be answered in months or years, for we all know that different individuals of the same age are in reality of different ages when it comes to the knowledge of the sexual apparatus, depending in part on the natural aptitude of the individual and in part on the environment, but just as soon as these organs are objects of curiosity to the child instruction should be begun.

The first part of the question is easily answered, for the supposition is that parents are anxious for the welfare of their offspring and naturally should be the instructors of their children in their care of the sexual apparatus, and it remains for us to impress on the parents the necessity of their giving the instruction. I well know the objection that will be offered to this statement, but I can assure the objector that if this instruction is not given in this manner improper information will be given by improper instructors. Many cases of venereal infection occur before the age of puberty is reached; some of these might have been avoided had the danger of venereal infection been known.

We must teach that continence is compatible with health. Among his associates the boy assumes to prove his manliness by his ability to use tobacco or liquor. Sexual intercourse is a frequent topic of conversation, and the boy that boasts of a dose is considered a man, indeed. Sometimes physicians have advised the sexual act as a cure for certain conditions by recommending marriage. Such advice is debasement of the sexual function and prostitution of the sacrament of marriage. Patients reasoning on such erroneous advice come to the conclusion that the sexual act is the cure and select a paramour instead of a wife.

While much will be accomplished by early instruction, it will not be general and we have to face a grown-up public that does not know to what extent venereal diseases prevail and we face the necessity for statistical data to prove our assertions. Figures are convincing arguments, but medical figures are often unreliable even when used for diseases that are not shamefully contracted, while applied to the diseases we are considering, having no reports made to health boards, nor having hospital accommodations for those suffering from these affection, reliable data is difficult to obtain.

Venereal statistics should not only give numerical frequency, but should also give attending sequelæ, emphasizing the sequelæ. Statistics that are well within the truth, instead of being overdrawn, that are beyond contradiction, would furnish us with a text-book for our use from Maine to California. Have such data authenticated by the American Medical Association. The public does not realize that syphilis and gonorrhea are dangerous diseases, nor that a lengthened treatment is necessary for their cure; neither does it realize that danger exists of these diseases being contracted innocently. Years ago when gonorrhea was considered simply a local affection, the discharge disappearing, the disease was pronounced cured, and, as this occurred at times very quickly under treatment, the affection was considered trivial by the profession, a belief that the laity soon adopted. Since the discovery of the gonococcus and the difficulty of its destruction our views have changed, but the laity still hold to the belief that a clap is no worse than a hard cold. That a gonorrhea ever causes constitutional troubles, or that it can ever be contracted by the use of napkins, etc., seems to the public absurd. It is entirely ignorant of the sequelæ that follows gonorrhea so often, and the death rate resulting after operations rendered necessary by these sequelæ is attributed to unnecessary surgery. It will require persistent effort to overcome this belief of the people, supported, as it is, by some members of our profession who regard a gonorrhea on the level of a five-dollar bill.

Regarding syphilis, the prevailing impression that, with the disappearance of the initial lesion, the disease has lost its contagiousness, must be combated. The laity know that the disease pursues a long course, but think that the only contagious lesion is the chancre, and the only danger lies in sexual intercourse. The innocent contraction of venereal affections, especially syphilis, tests the credulity of the average layman, and when the statement is made that body contact is not even necessary to catch the disease their credulity is not sufficient for belief.

We must prove these diseases chronic, lasting for a period of years, and during all this period any skin lesion or mucous membrane lesion or the blood of a syphilitic is just as competent to cause syphilis as the virus from the chancre. Warnings must be given against the careless use of places of public convenience, of public drinking cups, towels, combs, etc., and the act of kissing. I think it would be well to teach that all sores are dangerous, warning against contact with them for fear they might be syphilitic.

Another fact that we must emphasize is that it takes a long period of persistent treatment to cure these affections, if gonorrhea is ever cured, and the dangerous sequelæ that are liable to follow cases not properly treated must also be emphasized. The quacks make the work harder for us by their advertisements of their ability to cure these affections quickly and effectively. The majority of the laity know no difference between the advertising charlatan and the honorable physician, and the statement of one has as much weight as the statement of the other. It will be hard work for us to convince the people that the quacks are lying.

The danger of inheritance of syphilis is another fact that must be emphasized. The public has little idea of the enormous number of deaths resulting from syphilis. A bare statement of the fact is too appalling for their belief and we are accused of trying the fright method for our purpose.

If it were possible to clothe syphilis and gonorrhea with a semi-respectability, so that these pathologic conditions could be discussed by the laity as diseases dangerous to life and health in the same manner that tuberculosis is discussed, much would be gained. Syphilis and gonorrhea are so often contracted innocently that the cloak, "venereal," should be removed from them. If we can accomplish this, the death rate and morbidity that result from venereal diseases will be realized by the community and measures will be taken to control these affections.

Another matter that the public needs to learn is the necessity that exists for hospital accommodations for those that suffer from venereal diseases, who not only have not the proper facilities for successful treatment, but who become agents for the spread of these diseases innocently. Those of us that have dispensary experi-

ences know of the difficulties that attend the treatment of these affections when the patient can not be controlled. No general hospital admits venereal cases until the period of contagion has passed. Every hospital should have accommodations for venereal cases. Reporting by health boards of venereal diseases would soon provide hospital accommodation for patients with gonorrhea and syphilis.

Prostitution is the most fruitful source of venereal affections. The public knows this. What we are required to do in this connection is to demonstrate that a certain amount of legal control in isolating the diseased would be of great value. Prostitution will never be stamped out. This we must realize and direct our attention to measures that will minimize the dangers of contagion from this source.

423 Stevens Building.

WHAT SHOULD WE TEACH THE PUBLIC REGARDING VENEREAL DISEASE?*

GEORGE WHITESIDE, M.D.
PORTLAND, ORE.

Let us briefly consider, first, what we do teach regarding venereal disease; second, what deduction the average layman draws from information received, and, third, in what way our teaching may prevent the spread of infection.

As physicians we teach the public by precept and by example; we do not give systematic lectures or demonstrations to laymen; we give brief and fragmentary personal talks to our own sons (generally not to our daughters); to the children of our patients occasionally, but generally after the acquirement of disease and not before; very occasionally a few lectures are given to young men as members of a college or school or church, but never, to my knowledge, to young women. Now and then one learns of a class of men being instructed in methods of prophylaxis. That is all, except such fragmentary individual instruction as the physician gives to his venereal patients. What can we expect the public to learn from us in such a variety of unconnected and unsystematic ways?

I think we may expect just what we know to be the results. They may be summarized as follows:

The average boy is wide awake, bright, of inquiring mind and credulous. The average young man is his instructor and teaches him that gonorrhea is no worse than a cold in the head, that chancroid is due to filthy habits and can be entirely avoided by bathing and that syphilis is a rare and loathsome affection which is absolutely incurable.

We know these to be in brief, the opinions held by thousands of intelligent laymen and we know them to be from first to last untrue.

The average girl knows nothing of venereal disease. When she becomes a young woman she either remains in this blissful state of ignorance or, if she becomes intimate with low companions, she is taught by them to believe that gonorrhea is not virulent in the female, that its worst consequence is leucorrhea. With regard to chancroid and syphilis she believes the same misinformation given above.

We know these versions of the story to be also untrue to fact. These beliefs are the result of lack of intelligent instruction. On the other hand of how much benefit would it be to humanity to know the truth? I believe very little, indeed. If people were taught that gonorrhea is sometimes mild, transient and easily cured and at other times severe, protracted and difficult to cure; where would the advantage be? Would any given individual hesitate longer before exposing him or herself to infection?

If people believed syphilis to be, under careful treatment, mild and almost certain to be cured, would it encourage chastity?

These diseases have been prevalent since the earliest times of which history tells us; men of all races, of varied intelligence, of all religions, of all schools of medicine have thought, written and spoken on this theme. Nothing new can be said on the subject. Very likely in Pharaoh's time some Egyptian or Arabic medical society held just such a symposium on the subject as we to-day. What has come of the effort of centuries? Is venereal disease less prevalent to-day than then? I think not. Our enlightenment has not exterminated it.

I believe that effort to stamp out venereal disease by giving instruction regarding its nature, natural history, sequelæ and amenability to treatment is time wasted. So long as men desire, women and men reciprocate, venereal disease will exist and that will be as long as there are men and women in the world. The love of honor and justice, or the fear of evil, will always deter some but not all from venery.

According to the most modern ideas it is now thought best to try to reform vice by attacking it in a previcious stage. This axiomatic epigram appears in a monograph entitled, "Alfalfa in the Willamette Valley," by W. W. Cotton. In speaking of seed and seeding he describes a vine called dodder which is a parasite of the alfalfa plant. Mr. Cotton says: "The proper way to avoid dodder is not to plant the seed." How simple this statement and yet how all comprehensive! To paraphrase it we may here say that the proper way to avoid venereal disease is not to plant its seed. That is the modern method—to look forward and not back, to train the child in order that the next generation may be cleaner and more manly than the present one.

We must rely on the prophylactic value of very early education. If the anatomy of the sexual organs and their physiology and use were taught by every mother to her young children as soon as they are old enough to understand at all; if we did not wait until puberty but began at three or four or five years of age, would it not be better?

It is the mystery that shrouds the subject that renders it attractive. It is the secrecy of his elders that piques the curiosity of the child. A reasonably full explanation that satisfies the young mind's thirst for knowledge will dissipate the fog of mystery and render the subject no longer interesting.

Later, about the time of puberty, desire appears as a tempter. It is the strongest and most natural instinct of our natures, the instinct which leads us to wish to procreate, to regenerate the race. This can never be repressed. Education will not eradicate sexual desire. Should it do so the species would eventually become extinct.

Teaching and example may sometimes guide and train the mind to control the desires of the flesh until reason releases them and allows sexual passion an outlet. Such teaching should inform the mind of youth of the energy which should be potential. It should advise habits of

* Read in the Section on Hygiene and Sanitary Science of the American Medical Association, at the Fifty-seventh Annual Session, June, 1906.

cleanliness, both mental and physical, and should picture the possibilities of venereal disease. This last should not be overdone. The fear of the contraction of disease deters only the cowardly and these it often drives to the unnatural outlet of masturbation. Certainly venery is preferable to the mental degradation of the other vice.

Boys of 15 or 16 may be taught the symptoms, nature and results of gonorrhea, chancroid and syphilis, and the importance of proper treatment and how pernicious amateur tinkering is. This should not be done to frighten them, but simply as information. It is best done by the parents or by the family physician, or in the case of public schoolboys, whose home influence is sometimes not of the highest order, by some physician appointed to lecture to them on the subject. This latter method is probably the least beneficial.

In later life among mature men, such teaching is certainly less effective. To prevent venereal disease and to lessen the number of cases of it in the community, lectures on prophylaxis are undoubtedly of value for a time until men by habit become careless. Lectures on anatomy, physiology or symptomatology do not restrain or regulate the desire of mature individuals. Lectures on the curability of not only acute but chronic venereal disease and even on the remote results dissipate the erroneous ideas before mentioned. Whether such knowledge is conducive to public happiness or not is another question.

Does it do good to teach the frequency of epididymitis or stricture or to explain the causative relation of gonorrhea to ophthalmia neonatorum or pyosalpinx? Would gonorrhea be less frequent if it were generally known that a specific urethritis can not be contracted from a non-infected woman during the menstrual period, that intromission is not necessary for infection, that varicocele rarely produces sterility, and that physiologic seminal emissions are not a sign of impotence?

The education of our girls is a different matter. They should understand their anatomy and physiology, but let us spare the sympathetic sensibilities of girls of the better class. Why tell them of venereal disease or loathsome perversions of sexual desire? Girls who must protect themselves, who unfortunately have no one to look out for them, should be as well informed as the boys are. They must be taught the danger there is for them in drink, because it leads to venery, the possibility of conception and the crime of abortion. They should be taught these things by their mothers or, if that is not possible, by some high-minded woman physician.

The parasites known as gonorrhea, chancroid and syphilis are as destructive to the human body as the dodder vine is to the alfalfa plant, and our axiom is that "the proper way to avoid dodder is not to plant the seed." Let us, therefore, prepare the soil of the mind by well-chosen education begun very early and continued into adult life, because in that way we may best avoid venereal disease by teaching the youth or maiden not to plant the seed and also by giving it no encouragement to grow.

Whether or not such methods will better the condition of the world to-day is doubtful, but if we do not try it we can not find its sphere of usefulness.

Study Food.—There are many details respecting the digestion of all classes of food that must be known before one can apply dietetics in a practical and successful manner.—*Medical Times.*

WHAT SHALL WE TEACH THE PUBLIC REGARDING VENEREAL DISEASES?*

BRANSFORD LEWIS, M.D.
Professor of Genitourinary Surgery, Medical Department of the St. Louis University.
ST. LOUIS.

It is the united sentiment of modern students of this subject, that as a measure of public safety if for no other reason, the public should be taught certain facts regarding the venereal diseases. To me has been delegated the duty of assisting in the discussion of what should properly be brought within this category.

Such teaching should be considered under two headings: that by means of printed communications, and that by means of lectures. The scope of the instruction embraced in the printed matter necessarily will be smaller than in a lecture or a series of lectures. Teaching in this manner has lately been undertaken in Germany by the Society for Combating Venereal Diseases, the national organization of that country for sanitary prophylaxis. This society has issued for general distribution two circulars on the subject, one for women and one for men;[1] written in the simplest possible language, intelligible alike to the uneducated and to the educated. In these circulars the religious aspects of the question are not considered, the society deeming it advisable to leave their consideration to other hands. The circulars have been distributed free by the hundred thousand, in the German universities, factories and mercantile establishments of the Empire. They have aroused the interest and appreciation of the people whom they have reached, and must already have done much good, although so recently promulgated.

Since 1895 Professor Lassar has annually given public lectures at the University of Berlin on the same subject —not for the benefit of the medical students, but for those outside of that department, more especially.

While it is manifestly not desirable nor feasible to go into the subject to a profound degree, the curriculum of such teaching should embrace the fundamental truths of both the physiology and pathology of these affections. The simpler phases of genitourinary physiology is a proper basis on which to lay the foundation of instruction that is to safeguard the public against the many and obscure pitfalls of the so-called venereal diseases. Both youths and adults should know the rudiments of sexuality; of sexual immaturity and the consequences of imposing sexual activity on this delicate system when it is still undeveloped; of sexual maturity and its pregnant possibilities, both for good and for evil; of the sexual act, of impregnation and reproduction. The future of many an innocent girl is blasted because of lack of knowledge of even this much of her nature and being. The rudiments of sexual hygiene should be explained, and numerous superstitions that obscure the public mind should be exploded; one of the most prominent of which is the belief that it is injurious to the organs to go without intercourse for any length of time.

METHODS OF DISSEMINATING KNOWLEDGE.

A preliminary review of this kind paves the way to a better and easier understanding of the matters embraced in the further teachings.

The names and nature of the three diseases usually

* Read in the Section on Hygiene and Sanitary Science of the American Medical Association, at the Fifty-seventh Annual Session, June, 1906.

1. THE JOURNAL A. M. A., April 14, 1906.

termed venereal should be given, indicating: First, that while gonorrhea, caused by the microbe called the gonococcus, is usually a local disease affecting the urinary tract, in many cases it is spread throughout the system, and its possibilities for disaster are great in either capacity; second, that chancroid is a purely local, though actively-ulcerating sore, incapable of giving rise to systemic effects, whether mercury be taken "to keep it out of the blood" or not; thirdly, that syphilis, inaugurated by the local sore called chancre, is always a systemic and constitutional disease, also, whether mercury be taken or not "to keep it out of the blood."

The next step in the teaching is one of the most important in the whole curriculum: the modes of dissemination of these diseases. It should be known that all three affections may be transferred either with or without venereal intercourse. That gonorrhea and chancroid are conveyed only by transferring some of the discharge (pus) of those diseases, while syphilis can be conveyed not only by transference of discharge from any of its manifold lesions at various parts of the body, but also by the blood of the syphilitic individual during the active stage, and that this contagious period lasts for three or four years.

Thus, the field of contagion for syphilis is much larger than for either of the two others; its scope is almost unending. While chancroid and gonorrhea are transferred almost exclusively by sexual intercourse, either legitimate or otherwise, syphilis is transferred, in addition to this mode, by means of the various household utensils used in eating or drinking, such as spoons, knives, forks, cups; smoking-pipes, cigars, towels; by the act of kissing. Many epidemics of syphilis have been started and spread by such innocent media, including hundreds and even thousands of persons, young and old. The very teaching of these methods of innocent contagion illuminates the ways in which they may be avoided.

The many fallacies and superstitions of the public with regard to these diseases should be met and exposed. The common saying that gonorrhea "is no worse than a bad cold," is one of the worst of these; that it is easily cured by the shot-gun prescription of the druggist-friend; that the disease is well when symptoms subside and discharge ceases; and that "curbstone advice" is of any value whatever in these matters, should all be confuted as energetically and as rapidly as possible. The disasters to which they lead are inestimable. The mercenary motives of quacks and charlatans should be exposed and their villainous teachings rejected.

BEARING OF THESE DISEASES ON GENERAL HEALTH.

The bearing of these diseases on the general health of the affected individual should be explained, both as it relates to the present condition and to the future. The far-reaching consequences and complications of these diseases, when related, make an impressive argument for their avoidance by the tempted public. The public should learn that gonorrheal infection extends not only into all the organs of the genitourinary system, of both male and female, but also, on occasion, involves the blood, the vascular, the lymphatic and the nervous systems, the joints and the eyes, and results in such sequelæ as complete closure of the urethral outlet through stricture; impotence, sterility (42 per cent. of gonorrheics becoming sterile, while 50 per cent. of all sterility is due to gonorrhea); and that syphilis causes not only the disfiguring and dishonoring lesions of the skin, the face, body and limbs, the loss of hair; attacks the digestive, vascular and lymph systems, the bones, muscles and special organs of the body, but also results in such destructive conditions as the ataxias, paralysis, nerve degenerations, bone necroses (resulting in saddle-nose and other disfigurements), insanity and imbecility. When these things are well known outside of the narrow confines of the medical profession, a potent influence is established for recognizing these diseases and doing what can be done for limiting their dissemination.

RELATION TO MATRIMONY AND HEREDITY.

The relations of the affections under discussion to matrimony and to heredity should not be overlooked. The intimacy of married life is such that it is almost inevitable that when one of the contracting parties is affected the other becomes infected also. Of married women who acquire gonorrhea, fully 85 per cent. are infected innocently, through intercourse with their husbands; and the same is no doubt true of the other two of these affections.

When it comes to heredity, both gonorrhea and syphilis display their appalling effects. As a prolific cause of so-called race suicide, voluntary abortions are as nothing when compared to these. Gonorrhea exhibits its malign influence by rendering its subjects, both male and female, sterile, preventing impregnation; while syphilis attains the same end by bringing about countless abortions, even with women who yearn for motherhood, whose fondest wish is that of rearing a family. Syphilis in either parent contributes to the same unhappy end. When the people learn of these influences they will be able to recognize the more readily the hidden meaning of repeated events of this sort, and to take the precautions that will change them. Fortunately, chancroid has no hereditary influence. While gonorrhea is not inherited, its calamitous effects are not delayed long after the birth of the child of a gonorrheic mother. Fully 80 per cent. of all blindness, we are told, originates in gonorrheal infection of the eyes of the child during parturition, not to mention the number of such infections of the eyes that occur in adult life.

If it is important to teach people the full nature of these diseases when they do occur, it is equally as necessary to impress on them the extent to which they exist, both among nations and among the people themselves. The nation that is exempt from venereal imputation has not yet been discovered. So far as statistics are able to determine it, syphilis prevails among urban populations to the extent of from 7 to 14 per cent. at the present time; and it is further estimated that upward of 90 per cent. of all men have gonorrhea at some time in their lives. Like pale death, that knocks with equal fate at cottage door and palace gates, these diseases are not respecters of class, age, color, condition or occupation.

LONGEVITY OF THESE DISEASES.

The longevity of these diseases, both with respect to their activity as diseases, and their infectiousness, should be explained. Gonorrhea is both active and contagious for an indefinite length of time, only ceasing in these respects when the organisms are killed out. The capacity of syphilis for doing damage is indefinite and scarcely limited by years, but its period of contagiousness is not longer, usually, than about four years.

MORTALITY.

The mortality of these diseases forms an interesting study, and a surprising one, in certain respects. As a direct cause of death, syphilis ranks far below gonorrhea.

although the contrary is, no doubt, the current belief among the people. The implacable gynecologist has enlightened us on the terrific mortality of gonorrhea, in his exposures of its relations to pus tubes, to peritonitis and other end-results in women. We are told that 65 per cent. of all gynecologic operations are due directly to gonorrheal infection, either within or without the pale of matrimony.

CURABILITY.

The curability of these diseases is, likewise, a subject worthy of elucidation for the people. Noeggerrath has said, "Once a gonorrhea, always a gonorrhea." While it is probable that few, at the present time, subscribe to this sentiment, it is a lamentable fact that the people in general are prone to swing too far toward the opposite extreme, and to believe in the triviality of the same condition. With adequate and comprehensive treatment directed, primarily, at the destruction of the gonococci wherever they may exist in the organism, followed by measures to heal and to restore the affected tissues, it is probable that by far the greater majority of cases of gonorrhea are cured permanently. The belief in the incurability of the diseases rests, probably, on the fact that the majority of physicians, as well as the people, set too low a standard of requirement on the term, cure. They look on the absence of discharge and of active symptoms as indicative of recovery, when as a matter of fact these form very poor testimony to that effect; there may be abundant gonococci in a posterior urethral or seminal vesical inflammation without any outward evidences whatever. It is, indeed, just such cases that lead the infected individual into making the disastrous mistake of having intercourse and spreading the contagion, whereas, if he had an active discharge he would not think of doing such a thing. Moreover, the person who treats himself on this plan—of trying merely to stop the discharge—is the subject of an endless number of recurrences, which he may interpret as new cases; and consider himself wonderfully successful in curing them in a few days, with his sure-cure prescription; while, as a matter of fact, he never cures any of them. He merely stops the discharge, remaining as potential as ever for the dissemination of the disease and for its recurrence in himself.

It requires three years, approximately, of very steady treatment for the cure of syphilis, even in cases of moderate severity; in other cases, that display evidences of rebelliousness, treatment should be continued for two or three or possibly more years in addition to this. With such persistent endeavor methodically carried out, a cure may be expected in the large majority of cases.

INDICATIONS OF RECOVERY.

The indications of recovery from these diseases is an exceedingly important feature of their study, and is one that, fortunately, has fairly clear means for identification. With reference to the gonorrheal infection, nothing short of clearing up of both first and second urines, with the exception of a possible few mucous shreds in the first, which shreds contain no gonococci and only a moderate number of pus cells, should be accepted as indicative of recovery. And, in isolated instances, even these strict requirements may be too lenient. I have seen a few cases in which both urines were perfectly clear, and yet massage of the seminal vesicles expressed pus from those sacs. If there is reason to suspect the accuracy of a belief in the recovery of a given case, tests may be made by having the patient drink beer, which will reawaken the gonococci into activity.

With reference to syphilis, the rule usually followed is, after treatment has been carried on for what is considered a sufficient length of time, to allow the patient to go two years without any antisyphilitic medication; if any indications of the disease appear, to give another year's continuous medication; if none appear, it is well to give an occasional short course anyhow, to make assurance doubly sure, if for no other reason.

The absolute necessity of making searching investigation into this question, by the various means at hand, before entering into matrimony or essaying such relations, should be taught the public. This they should be made to understand, even if they forget all else connected with these diseases.

DISCUSSION

ON PAPERS BY DRS. MORROW, HERDMAN, HOLTON, TUFFIER, CARRIER, WHITESIDE AND LEWIS.

DR. LUDWIG WEISS, New York, agreed that publicity is demanded, but asked how we are to reach the public, remarking in regard to the symposium held in 1904 at Atlantic City that one newspaper reporter received a telegram from his paper saying, "Don't touch it." He said that physicians read papers at medical societies, but that they are relegated to the archives. Publicity, he declared, is an educational necessity; the newspapers must tackle the subject. With the hospital and dispensary returns falsified in not calling venereal diseases by their true names, it is only natural, he said, that the New York Department of Health, in stating the causes of death in 30,000 cases for 1901, gives only 172 deaths from venereal diseases. He asked where are the pus tubes, where the sequelæ of mutilating operations on women, where the gonorrheal endometritis, where the joint diseases. He said that these diseases should be reported to boards of health without names of patients, stating only the sex and age. He said that as the morbidity from these diseases becomes known they will bear the stamp of official recognition and we would soon be able to draw conclusions as to the mortality. This source of publicity, he said, would greatly help to combat venereal disease.

DR. C. E. WOODRUFF, Detroit, said that his practice is in the Army, where medical men are naturally supposed to know a great deal about venereal diseases, because soldiers are reputed to have a great deal. He declared that he wanted to deny that first of all. He said that soldiers have less venereal diseases than an equal number of other young men from the same class of life. He stated that he is surgeon of an army post and has one ward which he devotes to venereal diseases, and for three weeks recently that ward was empty. He denied that there is so much crime and immorality in the Army as people are fond of stating. Army surgeons try to instruct soldiers regarding the dangers of venereal diseases. In reference to instruction to college boys, he said that he asked the president of a college in New England what he was going to do about the matter. The president said that he did not know. He had received a great many circulars, but none were entirely satisfactory. He had read the lectures of Prof. Eric Poutoppidon, of Copenhagen, and these were pronounced the best and were probably appropriate for his students.

DR. FERD C. VALENTINE, New York, said that all serious students of this momentous question must agree on some points. The first of these is that so long as mankind remains frail, as it has ever been, men will acquire venereal infections. Many of those infected were so unfortunate during alcoholic inebriation. Perhaps an equal number, especially of boys, were brought to prostitutes by other boys. Statistics on this question are as yet not obtained. Until recently a larger number than now were advised by their fathers to cohabit, under a belief in the physiologic necessity of the act. The majority, however, are impelled by the naggings of sexual desire to seek its gratification. These are facts to which, as scientific investigators, we can not close our eyes. All efforts to combat the etiologic factors will ever have to contend with them. It

is true that the majority are ignorant of the dangers of venereal diseases, and this ignorance is by no means limited to the lowest social strata. Indeed, physicians who devote their energies exclusively to the study of genitourinary and venereal diseases have among their patients not a few physicians. This may be explained by the fact that until recently venereal diseases received but scant consideration in medical colleges. Such a taboo rested on them, Dr. Valentine said, that he was once ruled from the floor for mentioning them in this Section. That occurred fourteen years ago. Since then the dangers of venereal infection have been more widely studied by the medical profession. A few courageous men dared to brave public opinion by forming the American Society of Sanitary and Moral Prophylaxis, whose prime purpose appears to be to overcome the ignorance which fastens on the state the Moloch of venereal disease. Dr. Valentine avowed himself an enthusiast for the society's objects, though he is not such an optimist as to think that venereal diseases will be entirely stamped out. He believes that the majority can be taught the need of very early and very active treatment of venereal diseases. Once this is generally understood, the greatest danger to the individual and the saddest results to the family will be minimized.

Behind the study of venereal diseases is the ancient question of prostitution, clandestine and public, and at the very outset we must acknowledge that, in our present light, clandestine prostitution is beyond study. This, he said, does not crush the hope that the future will bring an understanding of the problem which will lead to its management. Public prostitution, however, is coeval with written history. That it is likely forever to continue is perhaps beyond dispute. Its study, however, can tend but to reduce its dangers. Many excellent men attribute the growth of prostitution to the growth of communities. They hold that prostitution is the fungus of our social evils, of environment, of defective education, of the scarcity of honest work for girls and women. Dr. Valentine denied this, first, because it is untrue, and, secondly, because it is an insult to womankind. Its untruthfulness is shown principally by a self-evident fact. In the past decade innumerable avenues for work have been opened to women, yet prostitution has increased. Dr. Valentine denied the accepted view, because it stamps every woman as a possible prostitute. It means that virtuous women might become whores if their social condition, their environment, their faulty education or lack of honest employment led them to need. He insisted that if such women were thrown into the deepest abyss of despair they would rather starve than prostitute themselves. He explained that he does not deprecate the noble efforts made to educate, to elevate and to develop means for the procurement of honest work for women; on the contrary, he would gladly go further than the now proposed plan to this end. He declared that he would labor that women who work for a living be aided and guided to the mental and physical superiority for which they are manifestly intended.

It requires, however, no marked pessimism, he said, to see that the best-made efforts will not reduce prostitution. This does not exclude justice to the trebly unfortunate creatures to whom the first birthright of woman is denied. They are all defectives. Pauline Tarnowsky measured a large number of Parisian prostitutes and found all with the stigma of degeneration; no matter how well raised, how exquisitely educated or surrounded by whatever affluence, prostitutes tend to reversal to that savagery in which polygamy is the rule. Were this view accepted, the greatest of problems could be better studied. Concisely, then, he said, a mental or moral defect makes prostitutes. No reliance can be placed on the now advocated means to check the ravages caused by this evil. Pamphlets on the subject have no meaning to the unfortunate beings. It is in the nature of things that these females will weep hysterical tears in public. Among their associates they revile those who would reform them and defile the literature printed for their moral elevation. Occasionally well-meaning but misguided crusades are instituted against prostitutes. They lead to hounding them with the police. This is as sensible as maltreating the insane to beat the devils out of them.

The consciousness that we are not yet prepared even to reduce prostitution should not deter us from striving to limit its evils. To chase prostitutes from their chosen haunts drives them into all parts of a city. Thus disseminated, they multiply as foci of physical infection and moral contamination. To protect clean parts of cities the prostitutes should be left in the districts which they have selected. Thus congregated, they can become amenable to health board regulations. Systematic examinations of their genitals, even twice daily, as suggested, would be of no avail, for between two such examinations a prostitute can easily infect twenty men. Moreover, those who would conscientiously examine a female for gonorrhea alone know that it can not be done in less than ten days. Segregation would require the confinement in hospital of any prostitute who had infected a man. If detained until cured she would be prevented, at least during that period, from infecting others. Dr. Valentine emphasized these points: 1. The people primarily should be instructed in the gravity of venereal diseases. 2. The public should be taught that to escape the ravages of venereal infection early and active treatment is necessary. 3. The quacks who profit by the prevalent ignorance will have their robberies reduced when the public has been taught to understand them. 4. All public-spirited citizens, whatever their occupation, should be persuaded to join the crusade against venereal diseases, at least by becoming members of the American Society of Sanitary and Moral Prophylaxis. 5. Until public prostitutes be given the right to live in certain districts it will be impossible to do anything to protect them or to protect the public against them.

DR. SENECA EGBERT, Philadelphia, believes in education on this subject; he believes that it is practically the only way of reaching a betterment of conditions, but he does believe that before we give the public this special education they ought first to have the general education in public health or hygiene. Dr. Egbert said that a few months before, at the request of Dr. Hurty, he prepared a paper which considered the teaching of hygiene in this country. Among all the colleges in this country, how many, he asked, have instruction in hygiene for the students? Dr. Egbert knows of only one that gives practically every student a course in hygiene. In Harvard one can not get such a course, except a small optional one in anatomy. In fact, there is not a course compulsory on practically all the students in any of the colleges, save one. Every freshman at Princeton must attend the lectures and receive full instruction in hygiene or, as Dr. Egbert likes to call it, public health, and Dr. Woodhull, who gives these lectures, weaves into that instruction this special education that every one ought to have. There are about 114,000 college students in this country. If the students in our colleges to-day, who will mostly graduate in the next four years, were fairly and wisely instructed, not only in these matters of the sexual and social evil, but in the fundamental principle of vital resistance, development and immunity, and of the importance of living a clean, moral and wholesome life, not only for the mind's sake but for the body's sake, most of those men and women would be living centers for the spreading of this education to the community around each of them. And if these college graduates can be used as a nucleus, the opportunity for which, Dr. Egbert believes, is right at our hands, we will do a great deal. How many normal-school teachers in this country, he asked, get any instruction at all on general hygiene, not to mention sexual or social prophylaxis? In 1903 there were about 63,000 students in the various normal schools in the United States; of these there were less than 25 per cent. receiving any instruction in public health or hygiene, and Dr. Egbert ventured that there was none receiving instruction on moral prophylaxis. In 1900 30 per cent. of the population was under 14 years of age, and this is probably equally true to-day; also, approximately 50 per cent. of the total population of the country to-day is under 24 years of age. These young people are to be taught by the normal-school graduates, most of whom have no instruction in hygiene. It has been said there are 14,000,000 young men in the country to-day under the age of 30, and that 50 per cent. of those 14,000,000 have some venereal disease before they reach 30. If these are facts, Dr. Egbert asked if we have not here great opportunities to extend this educational work and to carry on the fight where we can hit the hardest. Dr. Egbert stated

that his data were collected early in 1904 and that since then courses in hygiene or public health may have been established in some of the colleges or normal schools that did not previously have them.

DR. L. DUNCAN BULKLEY, New York, thinks that we are making a magnificent crusade in this direction, but that there is one point that has not been emphasized enough: namely, that in some way or other boards of health should have syphilis, gonorrhea and chancroid on their list of reportable diseases. He believes that the moment those names appear on the public lists the mystery will largely vanish. The moment the number of cases existing begin to be tabulated, then there will be material for such medical work. Ten or fifteen years ago in his book on "Syphilis in the Innocent" Dr. Bulkley pleaded for that; he pleads for it every time that he can get an audience.

DR. J. N. HURTY, Indianapolis, confined his remarks to the matter of legal control. In that line nearly every speaker on this subject says nothing can be done. In Indiana they are trying an experiment. The last legislature passed a law that no person afflicted with a transmissible disease (meaning venereal diseases principally) shall be privileged to marry. The question is, how shall it be executed? Of course, penalties attend, and the execution of the law has been left largely to the State Board of Health. The State Board of Health prescribes the questions to be asked of every applicant to marry, and licenses must be issued for all marriages. The questions have been formulated and have been in use for over a year. They are not severe, not exacting for the beginning, and the first opposition has subsided. The answers to these questions must be sworn to, and it has been said that the law simply makes more perjury. Dr. Hurty does not believe this is the case any more than happens in giving sworn court testimony. Of course, there is some perjury. In one instance in Indianapolis a marriage was stopped. The young man confessed to the clerk, when he applied for his marriage license, that he had gonorrhea, but that he believed that he was cured, though he did not know. The clerk had the power under such condition to refuse a license. The applicant was examined and was found to be infected, and that marriage was prevented. Of course, there were heartaches, but perhaps not near so great as might have followed the marriage.

It is proposed to go one step further and to have all such cases reported. It will be a difficult matter, but it can be accomplished. Many of these patients go to drug stores and are never seen by physicians, but a great many of them can be recorded and their names should be properly classified to guide the clerks who issue marriage licenses. This will not cover the whole field—nothing like it—still, Dr. Hurty contends that it will do some good. This Indiana law designed to prevent the marriage of diseased persons was written by one of the highest judges, and for that reason the people of Indiana are confident that it is constitutional. Dr. Hurty suggested that while studying this important question of personal purity before marriage the medical profession assume a more serious attitude, stop all jokes and all light references to venereal diseases. Let no vulgar stories pollute the lips of the physician.

DR. WILLIAM LEE HOWARD, Baltimore, said that in his opinion there is one and only one way that this discussion or these discussions could benefit the people: that is through publicity. It has been remarked that these meetings should not be reported in the press. If these are truths that we are talking about, they should be published. He knows of no truth that does harm. It is false reasoning that does harm; it is the hiding of these things which produces the morbid curiosity in the young—introspection. They will meet or see a word that will send the young man to the libraries; and if it is only put before the young that every human being and beast that they see is the result of sexual gratification, and not sensual, the mystery will be cleared away, and they will look on these matters as they do on every ordinary condition. Dr. Howard emphasized the fact that it is not innocence that ruins a girl, but ignorance.

DR. M. H. BAILEY, Cambridge, Mass., said that instruction in hygiene has been given at Harvard College for the last four or five years and previously at irregular periods. Ten or eleven years ago, by invitation of President Eliot, an address on the same subject was given to students in Harvard College by Dr. Cook, former president of the Middlesex South Medical Society. During the past year practically all the freshmen in Harvard College were obliged to receive instruction on venereal diseases; that is, all those students who took English A—which means about 550 out of 670 or 700 freshmen—received instruction in plain language.

To delay the communication of such knowledge until the end of the freshman year is a great mistake. There is no time in his college career, Dr. Bailey said, in which a student is so likely to fall into just these dangers as in his freshman year. He feels that it is a part of his curriculum, as one might say—that he must know everything that there is to be known. If he could receive proper instruction before he goes to college it might give him a different view of things and save him much physical and mental suffering. Dr. Bailey did not agree with the statement that it would not make much difference if young men did know about these things. It does make a difference. He has many records of young men with whom it has made a decided difference. Such instruction should be given early. It should not be forgotten that the great majority of young men never go to college.

DR. PRINCE A. MORROW, New York, said that the Society of Sanitary and Moral Prophylaxis, organized in New York over twelve months ago, has been the recipient of a great many letters from teachers, fathers and even mothers, and the universal sentiment—especially of teachers—is that it is impossible to make any effective argument to young men against incontinent living so long as their minds are imbued with the idea of what has been termed the sexual necessity: that is, that sexual intercourse is necessary to health. Now the medical profession, Dr. Morrow declared, is responsible for this heresy, or it is by the laity held to be responsible, because all these young men state that they have imbibed this view on the authority of physicians. A number of teachers have written to Dr. Morrow, stating that so long as doctors tell young men that sexual intercourse is a necessity they can not do one iota of good in trying to teach them the principles of chastity and right living. Resolutions declaring continence to be not injurious have been passed by the Brussels International Congress some three or four years ago, by the German Society for the Prevention of Venereal Diseases, by the American Society of Sanitary and Moral Prophylaxis and by a number of state medical societies—the Georgia society and one or two others.

DR. C. H. COOK, Natick, Mass., said that about thirty-five years ago Frank H. Hamilton, in his "Principles and Practice of Surgery," said that the poisons of syphilis and gonorrhea are so widespread and have contaminated the blood of so many people that in his opinion they are retarding the physical and intellectual progress of the human race. If that were true then, Dr. Cook said, it must be equally so to-day, for no special effort has been made to control them. Some one has said that "the silence of the wise man does more wrong to mankind than the slanderer's speech." Concerning these subjects the members of the medical profession are the wise men and the wise women. If the sentiment of that quotation be true, Dr. Cook said that a great responsibility rests on our profession. He appealed to the older men and women present to recall the situation thirty or more years ago, when women first began to study medicine, and to recall their position at that time. Dr. Cook was then a student in Bellevue Hospital Medical College. At the clinics in Bellevue Hospital women were sometimes subjected to rude and almost insulting demonstrations, because they were considered out of place and lacking in womanly delicacy and refinement. He said that there were professors, notably Professor Sayre, who, in language not to be misunderstood, said that women had equal rights there with the men, and if necessary the men would be turned out. Dr. Cook said that many women were present in the section meeting, and no question whatever was raised about the propriety of the subjects discussed before the mixed audience. He believes that the public can be brought up to the same standard that women in the medical profession and nurses have attained and that

men have attained with them. It seems to Dr. Cook that there are only two questions for consideration: First, is it right that diseases which are causing more suffering and more deaths than any other diseases shall be allowed free course, with no efforts made to control them? Second, whether we are in the wilds of Africa, under the shadows of Harvard, on Commonwealth Avenue, on Fifth Avenue or anywhere else, there are certain subjects concerning which there is a common knowledge. Those subjects are matter of food for the preservation of the body, of clothing suitable for climate and temperature and of the propagation of the species. Every rational human being, sooner or later, is going to know about the relation of the sexes. He asked if the majority of boys and girls in the future, as they have in the past, shall come to this knowledge in a filthy, mysterious way, or if it shall be lifted to a clean, high, self-respected standard. He quoted Garrison to the effect that: "Talking creates zeal; zeal creates inquiry; inquiry creates opposition; opposition creates action; action creates union and union creates victory."

DR. A. D. LAKE, Gowanda, N. Y., said that the only question before us is how to improve the situation. He said that we should invite the clergy, the press, and the teachers to cooperate in the consideration and discussion of this important subject. If much good is to be accomplished in this direction, we must go outside of our profession and endeavor to create a public sentiment in favor of the restriction of this evil by law. When the people generally more thoroughly understand and appreciate the importance of this reformation, some means will be found to bring it about. Legislation is needed. The power which reaches the law-making source is an emphatic public demand, which will come only as the public are educated and understand its necessity. If the papers on this subject, which have been read here, could be published in the newspapers, or if they could become a part of the system of hygiene taught in our public schools, then we would have begun a crusade from which good results might be expected to follow.

DR. H. S. POMEROY, Boston, declared that in the last thousand years civilized society has been cursed by four great physical evils: Smallpox, the so-called Great White Plague, alcoholism, and the social evil. The discovery of that grand master, Dr. Jenner, has put smallpox back into the dark ages. Within the last ten years the light has been let into the public mind in regard to the Great White Plague. When our forefathers were living, it was considered a special dispensation of Divine Providence. Now, after years of fear, tuberculosis has been attacked in its stronghold; and, to-day, we are practically masters of it. In regard to alcoholism, also, the public is being slowly aroused; much is being done; a great deal more is going to be done in the next few years; and in regard to that, he said, we may report progress, thank God, and take courage. In regard to the fourth of these four evils we want more light. Legislation is all very well and it does help; but there is no legislation in a country like this which is of the slightest use beyond the extent to which that legislation is incited in the first instance, and carried out and backed up afterward, by public opinion. There is a little, he declared, which we, as physicians, can do toward prophylaxis directly, and toward curing these diseases; but what we can do individually in that way is a mere bagatelle compared with what can be done by the sentiment of the great American public. He believes that, as physicians, we might better discard for the next five years all our direct efforts toward prophylaxis and toward curing the disease and spend our time, our enthusiasm, our money, our efforts toward arousing a public opinion. He said that he has been criticized and condemned by one of the best men who ever occupied a chair in the Harvard Medical School, because he has committed himself in one of his books to the theory that children should be taught about these things. It is not a question of whether the child shall be taught or shall not be taught; it is not a question of teaching or no teaching; it is not a question of safety through innocence or through ignorance. It is a difficult thing to get safety through ignorance; The ignorance does not exist. There will be knowledge; and if that knowledge is not scientific and pure and sensible and reverent so that the child grows up with a reverential respect for the most important organs that the Master has given him, after the central nervous system, then the child will grow up with prurient ideas, with false ideas, with ideas which will incite to physical, mental and moral decay. The child has got to know. He is instructed every day. He is instructed by the dogs, by the cats, by the birds, in all sorts of ways; he is instructed by his comrades of the gutter. He will get information. He is curious; he has a right to be curious. There is an insatiable demand in his mind to know about these organs, their origin, uses and destiny. Something about them he will learn. It will be right and it will be safe; or it will be prurient, it will be wrong. It devolves largely on physicians to say what this shall be. Let us lift up our voices, he said, let us use our pens, let us use our influence when we are together, when we are apart, in medical circles and in the public, in our churches, on our school committees, among our friends, in society, everywhere that we can, for a scientific, safe knowledge of these matters, to be put into the child, at least, as early as the dawn of puberty; and then, even, some of us will live to see the time when the diseases of the social evil, instead of being perhaps from 60 to 75 per cent. of those wherein woman needs care, will be a very small percentage. Dr. Pomeroy believes that this time will come.

THE CHEMISTRY OF THE ORGANIC SILVER COMPOUNDS.*

W. A. PUCKNER.

Professor of Chemistry, University of Illinois School of Pharmacy.

CHICAGO.

Believing that a knowledge of the chemistry of medicines will tend to their more intelligent use in the treatment of disease, a brief account of the chemical behavior of some of the organic silver compounds proposed for use in medicine is here presented. While in recent years the country has been deluged with new organic remedies the information offered regarding them has been meager and, being almost exclusively furnished by the promoter of each new article, is not always clear and to the point. More particularly is there a dearth, especially in the English language, of systematic discussion of the many new remedies, the available literature consisting either of the incomplete statements found in books on chemistry or pharmacy, or else the rather more comprehensive treatises hastily compiled from the manufacturers' literature. It is, therefore, hoped that the following, while presenting nothing new, may contribute to some extent to a better interpretation of the therapeutic effect of the many silver compounds placed before the medical profession.

THE CONSTITUTION OF SILVER COMPOUNDS: SIMPLE SILVER COMPOUNDS.

When to a solution of silver nitrate there is added solution of sodium chlorid, or potassium chlorid, or almost any other chlorid, a white, curdy precipitate of silver chlorid is produced; a solution of any soluble iodid produces a precipitate of yellow silver iodid; addition of an albumin solution produces insoluble silver albuminate. Precipitates having the same composition will be obtained if, instead of a solution of silver nitrate, one of silver sulphate or of silver acetate is used. In many other ways silver salts show similar behavior regardless of the acid with which the silver is combined, and they are said to be peculiar to silver and are used to identify silver compounds. This similar behavior of different silver compounds is now generally believed to be due to the

* Read in the Section on Pharmacology and Therapeutics of the American Medical Association, at the Fifty-seventh Annual Session, June, 1906.

separation (ionization) of the silver compounds, when in solution, into their constituent parts (ions) thus:

Silver nitrate into silver ions and nitrate ions, or

$AgNO_3 = Ag^{\cdot} + (NO_3)'$.

Silver sulphate into silver ions and sulphate ions, or

$Ag_2SO_4 = 2Ag^{\cdot} + (SO_4)''$.

Silver acetate into silver ions and acetate ions, or

$AgC_2H_3O_2 = Ag^{\cdot} + (C_2H_3O_2)'$.

The dots and accents are used to indicate that these parts do not exist as such but are still combined with, or attracted toward, each other.

Since such solutions all contain identical silver particles or ions, it is but natural that they should show similar properties.

COMPLEX SILVER COMPOUNDS.

If, on the other hand, to a solution of silver nitrate considerable potassium cyanid is added, and if now to this solution a chlorid, bromid, iodid or albumin solution is added, no precipitation will occur. In general, such a solution will not show the behavior characteristic of silver solutions. The generally accepted explanation for this behavior is that the addition of the alkali cyanid caused the formation of another silver compound, thus: $AgCN + KCN = KAg(CN)_2$, which, when dissolved in water separates (ionizes) into potassium ions and silver cyanid ions, thus: $KAg(CN)_2 = K + (Ag(CN)_2)'$. Since such a solution contains no silver ions it is not surprising that it fails to show the properties of ordinary silver solutions.

But by appropriate tests it can be shown that such a solution containing the complex silver-cyanid ions does contain very small amounts of silver ions: that the complex ion itself undergoes to a slight extent dissociation into Ag. and 2 (CN)'.

Many other silver compounds have been prepared which, when dissolved in water, contain the silver in complex radicles or ions, which themselves, to a slight extent, dissociated to form silver ions. On this behavior of the complex silver compounds just indicated their proposed use in medicine is based. Solutions of simple silver compounds, such as silver nitrate, reacting to form insoluble compounds when mixed with solutions containing chlorids or albumin bodies, both abundantly found in the body fluids, the reaction between silver and chlorid, albumin, etc., occurs at once and hence the effect of silver will only be obtained superficially and there it will act as a cauterant. On the other hand, solution of complex silver compounds containing but few silver ions will be but slowly affected by the body fluids; hence they may penetrate deeper and exerting the specific action of silver compounds very gradually do not act as cauterants. This slow action of such complex silver compounds can, of course, occur only if the compound is undecomposed by the body fluids; in the same way that a chlorid may be added to an ammoniacal solution of silver nitrate without causing precipitation only as long as alkalinity obtains.

COLLOIDAL SILVER.

When an aqueous solution of silver nitrate or other silver salts is treated with a reducing agent, metallic silver is formed and being insoluble in water it separates out of the solution. But, under certain conditions, silver solutions may be treated with reducing agents, when no precipitate of metallic silver is formed, although the reduction plainly occurs. This reduction product when collected and purified is almost pure silver. It differs on the one hand from metallic silver, especially in being soluble in water; on the other hand its solutions fail to show many characteristics of silver solutions. While a solution of this substance is readily changed so as to show the behavior of solutions of ordinary silver salts, it differs in that no precipitate is produced by albumin solutions and that in the presence of such albuminous bodies no precipitation is produced on the addition of chlorids.

It is on this property that its use in medicine has been based. This form of silver is commonly known as colloidal silver because it is held back by certain membranes non-permeable to non-crystalline substances, such as proteins, gums, mucilages, and generally known as colloids.

As regards the chemical nature of this "colloidal silver" there is still much doubt. It was pointed out that analysis shows it to be nearly pure silver, yet all attempts to obtain a preparation containing 100 per cent. of silver have been unsuccessful. And some investigators believe that the so-called colloidal metallic silver really is a compound containing the silver in a complex molecule and that on this account the properties of silver compounds are not shown. This is especially true of a preparation known as collargolum; thus Hanriot[1] found it to contain only 87.3 per cent. metallic silver and concludes that its properties were due to the presence of an organic acid (see silver lysalbinate below) which he calls collargolic acid. More generally, it is accepted that in the process of manufacture the silver has been reduced to the metallic state, but that its separation as solid, insoluble silver has been prevented (postponed?) in some way. The silver being in the metallic state and not in the ionic condition is, of course, not affected by chlorids, albumin, etc., just as little as a silver coin would be.

Besides the colloidal metallic silver, a number of compounds of silver, such as the oxid, chlorid, carbonate, have been proposed for use in medicine in colloidal water soluble form. Here, too, the true chemical condition is still in doubt. It is generally held that in such substances the insoluble silver compound has been produced, but that its separation has been prevented or retarded by such bodies as albumin, gelatin, gums, etc. Other investigators hold to the belief that the silver is a part of a complex molecule and hence masked. Still others believe that the silver compound exists in an insoluble form, but that its precipitation is postponed indefinitely because of its fine state of subdivision and also because of the presence of the colloidal gelatin, etc.

CLASSIFICATION OF ORGANIC SILVER SALTS.

In the following a brief account of the many organic silver salts proposed for use in medicine is offered. The discussion of each article is usually confined to two particulars, namely, the chemical composition and the chemical properties, i. e., the behavior in the test tube. Often the method of manufacture and the patents governing the same must be taken up in order to make clear the probable composition of the article. To facilitate reference, an alphabetic classification has been adopted; and although these substances are almost exclusively known by coined names, yet it has seemed more rational to discuss them under their chemical titles, references to these being made whenever possible.

Actol: A trade name for silver lactate, which see.

Aktol: A trade name for silver lactate, which see.

Albargin: See silver gelatose.

Albargol: See silver gelatose.

1. Cr. d. l'Acad. des Sciences, vol. cxxxvi, pp. 680, 1448, and vol. cxxxvii, p. 122; also, Chem. Centbl., 1903, vol. 1, pp. 1916 and 1903, vol. II, p. 280 and 548.

Argentamine: A trade name for a solution of silver nitrate in diaminoethane (ethyldiamine); see diaminoethane silver nitrate.

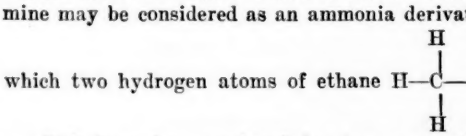
Argentol: A trade name for silver oxyquinoline-sulphonate, which see.

Argonin: See silver caseinate.

Argonin L.: See silver caseinate.

Argyrol: See silver vitellin.

Diaminoethane Silver Nitrate: Diaminoethane or ethyldiamine may be considered as an ammonia derivative of ethane in



which two hydrogen atoms of ethane $H-C(H,H)-C(H,H)-H$, $CH_3.CH_3$ or C_2H_6 have been replaced by two ammonia residues, NH_2 thus: $H_2N-C(H,H)-C(H,H)-NH_2$, $CH_2(NH_2).CH_2(NH_2)$ or $C_2H_4(NH_2)_2$.

Just as ammonia reacts with water to form ammonium hydroxid, $NH_3 + H_2O = NH_4OH$, so diaminoethane reacts to form a hydroxid, $C_2H_4(NH_2)_2 + 2H_2O = C_2H_4(NH_3OH)_2$, and, as might be expected, aqueous solutions of the two products, namely, ammonium hydroxid and diaminoethane hydroxid have very similar properties; thus, with silver salt both form solutions (compounds) which are not precipitated with chlorids. Based on this latter property of diaminoethane, and on the property that it does not precipitate, but rather dissolves, albumin, attempts have been made to use compounds of silver and diaminoethane in medicine. Argentamine (German patent No. 74,634) formerly was stated to be made by dissolving silver phosphate and diaminoethane in water. The silver phosphate solution having been found to be unstable the same name is now applied to a solution obtained by dissolving 10 parts silver nitrate and 10 parts diaminoethane in 100 parts of water. Chemically this may be considered as a complex silver compound, permanent only in alkaline solutions and then showing the characteristic properties of silver salts to a very limited extent and at the same time the alkaline properties of the solvent.

Credé's Antiseptic: See silver citrate.

Ethyldiamine Silver Nitrate: See diaminoethane silver nitrate.

Ichthargan: See silver ichthyolate.

Ichthargol: See silver ichthyolate.

Itrol: A trade name for silver citrate, which see.

Largin: See silver protalbinate.

Novargan: See silver proteid.

Picratol: See silver picrate.

Protargol: See silver proteid.

Silberol: See silver phenolsulphonate.

Silver Acetate: This is the silver salt of acetic acid, $HC_2H_3O_2$ or CH_3COOH, and its composition is $AgC_2H_3O_2$ or $(CH_3COO)Ag$. Its solubility in water is much less than that of silver nitrate; in all other ways it shows the properties of simple silver salts.

Silver Albuminate: See silver protein.

Silver Caseinate: Sodium caseinate, the sodium salt of casein, is obtained by reacting on casein with sodium hydroxid solution. If to such a solution silver nitrate is added and then alcohol, precipitates are obtained which have been taken to be sodium silver-casein, that is, a salt in which sodium is the basic ion, while the silver is a part of the acid radicle. A solution of such a compound will, of course, fail to show the reactions of silver compounds, and hence will not react with chlorids, albumins, etc., whence its use in medicine. Argonin (U. S. patent 575,277) is a trade name applied to such a sodium silver caseinate. It is claimed to contain about 4.3 per cent. of silver, to be slowly soluble in cold water, quickly in hot water, so that a 10 per cent. solution may readily be prepared which is neutral to litmus and not affected by chlorids, albumin, hydrogen sulphid or alkaline sulphids. Argonin L. or argonin, soluble, said to be a compound of similar composition, but containing 10 per cent. of silver, and to be readily soluble in cold water, has recently been offered for sale as an improvement on argonin. Recent investigations (see silver lysingenate) seem to indicate that this and other similar compounds, which form solutions that are neutral or alkaline, contain silver compounds in colloidal condition.

Silver Citrate: This is known also by the coined names *Itrol* and *Credé's Antiseptic*, is the normal silver salt of citric acid, $H_3C_6H_5O_7$ and has the composition $Ag_3(C_6H_5O_7)$. It occurs as a heavy white powder, contains about 63 per cent. of silver, and is almost insoluble in water, one part requiring about 3,800 parts for solution. While all silver salts are rather easily reduced, usually liberating silver in the metallic state, this tendency is somewhat more pronounced because citric acid itself tends towards oxidation, and hence acts as a reducing agent, thus the salt is decomposed with separation of metallic silver when boiled with water.

This ease of decomposition is also illustrated by the manner of marketing *Itrol Credé proocculis*, a very finely powdered silver citrate. It is put up in opaque vials, sealed and containing only 0.5 or 1 gm. of substance, and it is recommended that if the vials are opened frequently the contents remaining after two weeks should be rejected. On the readiness with which silver citrate decomposes, its introduction in medicine was based. It was one of the precursors of colloidal metallic silver and has largely been abandoned in favor of the latter because of its insolubility.

Silver Eosolate: This is said to be silver acetguiacol-trisulphonate. The chemical makeup of such a salt may best be illustrated by its synthesis. From guaicol, $C_6H_4(OH)(OCH_3)$, the acetguaiacol, $C_6H_4(CH_3COO)(OCH_3)$, is obtained. This is then converted by treatment with strong sulphuric acid to the acetguaiacol-trisulphonic acid $C_6H(CH_3COO)(OCH_3)(SO_2OH)_3$ and from this the silver salt, $C_6H(CH_3COO)(OCH_3)(SO_2OAg)_3$ or $Ag_3(C_9H_7O_{12}S_3)$, is prepared. The properties of such a compound are indicated by its composition: it is a simple silver salt and should on the one hand show the characteristic silver properties, modified to a slight degree, if at all, by the acid radicle, while the acid radicle should possess the properties of a phenolsulphonate or sulphocarbolate. It should here be noted that at the same time that objectionable properties, disagreeable taste, insolubility, etc., of guaiacol are removed by sulphonation, that also its medicinal effect is decreased or destroyed.[2] As with sulphonates generally, we here have a water soluble, permanent salt.

Silver Ethylenediamine Salts: See diaminoethane silver nitrate.

Silver Gelatose: Under the title albargin a silver preparation was placed on the market which was prepared (German patent No. 141,967) by adding to a solution of "gelatose" a solution of silver nitrate, neutralizing and evaporating to dryness. The term gelatose is used to indicate the products produced by the hydrolysis of gelatin, also known as gelatin-peptone or gelatone. While the claims made by the manufacturer or his agents have been vague and confusing, it appears to be a simple mixture of silver nitrate and the decomposition products of gelatin. Its chemical properties are those of silver nitrate modified by the presence of the protein bodies, which, as was noted when discussing the colloidal silver compounds, have a tendency to retard or prevent the typical silver reactions.

Silver Ichthyolate: Compounds of ichthyol and silver have, from time to time, been proposed for use in medicine. Just as ichthyol is a complex mixture, so the composition of the ichthyol-silver compounds is indefinite; also, just as ichthyol largely is the ammonium salt of a mixture of acids, known as ichthyol-sulphonic acid, obtained by treating the crude ichthyol oil with sulphuric acid, so the ichthyol-silver compounds are, at least largely, salts in which silver is the basic or positive part and the ichthyol-sulphonic acid the negative part or acid radicle. Several methods resulting in widely differing preparations have been proposed (German patent Nos. 99,124, 112,630, 114,394). The article now on the market, ichthargan, also known as silver ichthyolate, silver ichthyol-sulphonate, is a brown powder, odorless and claimed to contain 30 per cent. silver and 15 per cent. sulphur in permanent combination. It is readily soluble and possesses on the one hand the properties of

2. Ther. Mon., 1899, p. 96; also Arch. f. Exp. Path. and Pharm., vol. 1, p. 340.

a simple silver salt, on the other hand the properties of the ichthyol derivative. It has been claimed that the process (German patent No. 114,394) which rendered the salt soluble, odorless and permanent also rendered the ichthyol less active or even inert.[3] Under the name *Ichthargol* a silver ichthyolate at one time was offered which was insoluble in water and contained 12 per cent. of metallic silver.

Silver Lactate: This is known also by the coined name *Actol*, or *Aktol*. It is the silver salt of lactic acid, $CH_3.CHOH.COOH$. Its composition is $AgC_3H_5O_3+H_2O$, and therefore it contains about 50 per cent. of silver. It is soluble in 15 parts of water. Lactic acid, or 1,2-hydroxy propanoic acid, in common with other 1, 2-hydroxy acids, being readily oxidized, and the silver in silver compounds being readily reduced to the metallic state, silver lactate is a decidedly unstable salt of silver. The ease with which the salt is reduced is shown by the discoloration which its solutions undergo. Its use in medicine has also been based on the tendency to set free metallic silver, as when gauze, ligatures and drains are impregnated with the solution and then exposed to light, so as to cause the reduction. It is one of the precursors of the colloidal metallic silver.

Silver Lysalbinate: C. Paal[4] has prepared two new organic silver salts which promise to throw much light on the chemistry of silver compounds. He has shown the formation of two bodies of weak acid character by treatment of egg albumin with dilute warm sodium hydroxid. These bodies, which he terms protalbinic acid (Protalbinsäure) and lysalbinic acid (Lysalbinsäure), are weak acids and form definite compounds with silver and other metals. Silver lysalbinate he concludes to be a simple salt of silver, which has the peculiar property that when treated with alkalies, silveroxid or hydroxid is formed, but which, because of the protecting action of the protein body, remains in colloidal solution. These experiments suggest the thought that many silver compounds of protein bodies which are said to contain the silver in a complex or masked combination really contain colloidal water-soluble compounds of silver.

Silver Nucleinate: Nargol is the trade name of a compound of silver and nucleinic acid. According to the patent this article is prepared from a purified nucleinic acid made from yeast fermentation residues (German patent Nos. 113,164, 118,050). It is claimed to contain 10 per cent. of silver, is readily soluble in water, yielding a faintly alkaline solution, which is not precipitated by chlorids or albumin. What was said regarding the chemical nature of silver caseinate and silver lysalbinate applies to silver nucleinate. While generally considered to be a complex silver compound containing the silver combined with the nucleinic acid in such a way as not to show ordinary silver reaction, it is possible that instead it is a colloidal compound of silver.

Silveroxyquinoline Sulphonate: Under the trade name Argentol, silver oxyquinoline sulphonate, also called silver hydroxyquinoline sulphonate and silver quinaseptolate, the silver salt of the sulphonic acid derivative of oxyquinoline is sold. Its formula is given as $C_9H_5N(OH)(SO_3Ag)$, and indicates that it contains about 32 per cent. of silver. It shows the properties of a simple salt of silver, modified by the slight solubility in water and by the character of the acid radicle. This acid radicle, still retaining its phenolic hydroxyl, possesses the properties of acting as a reducing agent when in alkaline solutions; thus when the salt is boiled with water it decomposes, with liberation of silver. On this reduction of the silver to the metallic state in alkaline solution the use of the argentol as a dusting powder for wounds and also as an intestinal antiseptic has been based.

Silver Phenolsulphonate: Under the trade name Silberol the silver salt of paraphenolsulphonic acid has been introduced; it is variously called silver phenolsulphonate, silver phenylsulphonate, silver sulphocarbolate. Its composition being $C_6H_4(OH)(SO_3Ag)$ or $C_6H_5O_4SAg$, it contains nearly 38.5 per cent. silver. It is very soluble in water, and in solution shows the properties of a simple silver salt on the one hand, on the other hand those of a phenolsulphonate or sulphocarbolate.

Silver Picrate: Silver picrate, or silver trinitrophenolate, is marketed under the name Picratol. Trinitrophenol or picric acid, $C_6H_2(NO_2)_3OH$, being a body of very decided acid properties, forms a well-defined silver salt. Its composition is $C_6H_2(NO_2)_3(OAg)+H_2O$, and it therefore contains about 30 per cent. of silver. It is claimed to be soluble in 50 parts of water, and, being a simple salt of silver, the solution shows all the characteristic properties of silver salts and also those of picrates.

Silver Protalbinate: Under the names Largin and Silver Protalbin, Lilienfeld, a silver compound has been introduced which is of the general nature of silver lysalbinate (see) and silver nucleinic (see). It is said to be obtained[5] by hydrolysis of nucleoproteids with alkalies, whereby a body soluble in alcohol and free from phosphorus (protalbin or protalbinic acid) is produced. An alcoholic solution of this product on treatment with ammonium-silver nitrate solution yields the silver compound largin. It is said to contain 11 per cent. of silver, to be soluble in 10 parts of water, yielding a slightly alkaline solution, which is not affected by chlorids or albumin. The statements regarding the chemical nature of silver caseinate, silver lysingenate and silver protein (see) apply here.

Silver Proteid: Protargol, or protein-silver salt, also known as silver protein and silver methylenealbumose, is a silver compound, obtained, according to the patents (German patent Nos. 102,455, 105,866, 118,353, 118,496), by treatment of insoluble silver protein compounds with a soluble albumose. The silver protein compound is said to be obtained by treating protein bodies, such as egg albumin, serum albumin, albumoses or peptones, with silver salts. The method of obtaining albumoses given depends on the treatment of egg albumin with formaldehyd, whereby a product is obtained which, dissolved in water, is not coagulated by heat. Protargol is yellow powder, contains about 8.3 per cent. metallic silver and is very soluble in water. No precipitation occurs on addition to the solution of albumin, chlorids or free hydrochloric acid. Addition of alkali sulphids gradually causes darkening and finally formation of a precipitate.

The chemical nature of this article is still in doubt. It is generally stated to be a complex silver compound in which silver forms a part of the protein molecule, forming solutions which contain no silver ions and hence do not show the ordinary silver reactions. On the other hand it is very possible that we are dealing with silver compounds, retained in the colloidal soluble form by the presence of the proteins.

Novargan, described by the manufacturers as a proteinate of silver, appears to resemble protargol closely in composition and properties.

Silver Vitellin: Argyrol and silver vitellin are names applied to a silver compound of a protein resembling vitellin, obtained from serum albumin by hydrolysis. It contains from 20 to 25 per cent. silver and is freely soluble in water. The solution is not sensibly affected by albumin, chlorids or free hydrochloric acid. The statements regarding the composition of compounds containing masked silver (see silver caseinate, silver lysingenate, etc.) are probably equally applicable to this compound.

DISCUSSION.

DR. S. SOLIS-COHEN, Philadelphia, said that he would discuss the therapeutic aspect. Physicians, he said, should consider, in both the external and internal applications of the metals and metallic compounds, the probability of developing the ionic state of the element. An atom set free from combination is by that very action rendered ionic, or is in a nascent state. It is thus prone to enter into a new combination and by reaction with the elements of the tissues produces certain definite chemical results. On the other hand, when preparations are administered in which the ionic state of the metallic atom is prevented or obscured, or is slow of development, certain other effects than those due to combinations of the metal with the tissue may be brought about; and it has seemed to Dr. Solis-Cohen that this is the explanation of the therapeutic action of colloidal silver as distinguished from the salts of silver. In the case of the latter, decomposi-

3. Frankel, S.: Arzneimittelsynthese, second edit., p. 621.
4. Ber. d. chem. Ges., vol. xxxv. pp. 2195, 2206.
5. Wien. klin. Wochft., vol. xl, p. 260.

tion of the salt and combination of the silver with the proteid molecule or with some atom acting as a negative ion takes place. In consequence, partial destruction of the tissues ensues as when mercury or any other metal combines with the cell. If enough silver enters into combination, the cell is completely destroyed; if but little combines there is a stimulation of the vital chemistry of the cell by which the damaged portion may be thrown off and regeneration occur. This, he said, seems to be the way in which mercury and iodin compounds bring about the substitution of healthy for diseased tissue in syphilitic degenerations of cells and perhaps in some inflammatory sequelæ. The chemistry of the masked silver compounds to which Professor Puckner referred, Dr. Solis-Cohen said, is to him *terra incognita*. He does not know of any literature on the subject which will enlighten anyone except the expert chemist, although he has seen more or less intelligible statements of the empirical composition of most of these compounds. He has seen therapeutic results, however, which show that some of these preparations at least have value altogether apart from what might be attributed to them from our knowledge of the action of the ordinary inorganic salts of silver. Dr. Solis-Cohen said that he could not explain this, and has seen no explanation which satisfies him; for the present he is content to accept and to utilize the fact. Some of these substances have bactericidal power especially as regards the gonococcus, but one of the most useful of them has little, if any, value as a germicide, yet it reduces inflammatory action and promotes absorption of chronic exudates. As to the colloidal salts in general, it is quite probable that in the organism they may play the part of katalytic agents, similar in many respects to the organic enzymes. The therapeutic value of colloidal silver may thus be largely due to katalytic action in taking up and again yielding oxygen, thus destroying toxins, bacteria or diseased cells—a chemical amboceptor action, to take an illustration made familiar by Ehrlich—and through such an action it may prevent or retard sepsis. It certainly, he said, has a definite therapeutic action and should be employed more extensively in larger and more frequent doses than we have been using. In regard to the external application of nitrate of silver Dr. Solis-Cohen agrees with Fraenkel that the cauterizing action is due to free nitric acid and that hence organic compounds which do not possess an acid element give us equal disintegrating, resolvent and absorbent effect, and in some instance antiseptic action also, without cauterization. In many cases this is to be preferred. The rules laid down by Fraenkel for the ideal silver compound are simple. They are four—two positive and two negative. Positively the compound should contain the largest amount of silver possible and should be soluble. Negatively it should be non-irritating and should not be decomposed by the tissues. There are some cases, however, in which we do wish decomposition of the agent in order to utilize the ionic effect of the metallic atom. Hence there are special uses for each type of compounds described, and Puckner's classification ought to aid us in deciding which class, and which agent of the class, to use in any given case.

DR. W. J. ROBINSON, New York City, said that while we call collargol soluble silver, the adjective soluble is hardly correct. It does not make a true solution, only an exceedingly fine suspension. True, it is the finest suspension obtainable, but still it is a suspension and not a solution. That this is not merely theory, but fact, can be positively demonstrated by the aid of the ultra-microscope. A "solution" of colloidal silver in water, examined under the ultra-microscope, shows the beautiful, shining particles of silver, as clear and distinct as grains of sand. These can not be seen under the ordinary microscope. Dr. Robinson's opinion is that in acute gonorrhea the organic silver compounds are much superior to silver nitrate. In fact, in the acute stage of gonorrhea, silver nitrate, he thinks, should never be used. In chronic urethritis, however, silver nitrate seems to act best, and is still the remedy *par excellence* in spite of the multitude of organic compounds. Dr. Robinson believes that the nitric acid radical plays an important and hitherto unrecognized rôle. It can not be the silver alone that acts, for there are many compounds with a large silver percentage that are much less active than other compounds with a lesser silver content. Dr. Porosz of Budapest had been making experiments in treating gonorrhea with very dilute solutions of nitric acid, and he claims very good results. This goes to show the importance of the NO_3 radical.

DR. C. S. N. HALLBERG, Chicago, said that the relative percentage—amount of silver—ranges from about 10 to about 25 per cent., and he wished to know whether or not the preparations are correspondingly more potent on account of the silver percentage.

PROF. W. A. PUCKNER, Chicago, said that he did not attempt in any way to take up the therapeutic effect. The paper is intended as a conservative statement of the present state of knowledge for physicians who may wish to consult it. In reply to Professor Hallberg's query he said that the organic silver compounds vary from 5 to possibly 30 per cent. of silver. He has no doubt at all that their action is largely dependent on the amount of silver present. The silver ion is colorless; the ions of the complex silver compounds, so far as established, are colorless. Professor Puckner believes that the color of colloidal silver solutions is due to reduction processes. On close inspection it gradually shows various colors as the particles aggregate, so the color is due to that. In reply to Dr. Robinson's comment, he said that he tried to make a conservative statement of the present theories; it is generally believed that the silver is there in solution, possibly in the metallic form.

THE INFLUENCE OF X-RAYS IN THE TREATMENT OF LEUKEMIA AND HODGKIN'S DISEASE, WITH A REPORT OF TWO CASES.*

AUGUSTUS H. ROTH, A.B., M.D.
ANN ARBOR, MICH.

Since the therapeutic value of *x*-rays in Hodgkin's disease and leukemia is still in the experimental stage, and requires the report of more cases which have been under careful observation and treatment for longer periods of time, in order to arrive at definite conclusions, the two following cases are submitted with their detailed histories, and results of treatment; together with an account of some experimental observations concerning the action of *x*-rays on the blood and urine in leukemia.

HODGKIN'S DISEASE: REPORT OF A CASE WITH A SYMTOMATIC CURE.

Patient.—Mrs. R. came to the medical clinic of Dr. Dock, May 13, 1904, because of nodules in the sides of the neck and pain in the neck and thorax.

History.—The patient's family history is negative. She has had measles, scarlet fever and three attacks of "la grippe." Five years ago she noticed a mass on the left side of the neck above the clavicle. The mass was soft and puffy and movable beneath the skin. It became harder in about six weeks. At first there was no pain, but later she had intermittent attacks of pain of a sharp-shooting character. The skin over the mass became sore to the touch. In the winter of 1903 she had noticed a shortness of breath at times and a sort of a catch on inspiration; so that she breathed with considerable discomfort. During the three weeks before coming to the clinic she had been somewhat hoarse, and had increased difficulty in breathing at night. The patient said that other lumps or masses have appeared since the first one described. The order of appearance was as follows: (1) On the neck above the clavicle, (2) under left arm in axilla, (3) behind angle of the left jaw, (4) on the chest, (5) behind angle of right jaw. The last four occurred within four or five weeks. The patient used to weigh 160 pounds, she now weighs 139. She has a poor appetite, is habitually constipated, has no cough.

---

* From the Medical Clinic of Dr. Dock, University Hospital.

Examination.—Her frame was of moderate size; there was a fair amount of panniculus. Musculature was small and flabby. The skin was rather sallow, particularly on the abdomen. Linea albicantes were present. A few scratch marks were present. There was slight edema of the ankles. Over the thorax, enlarged superficial veins extend out to each mammary gland. The cervical lymph glands were enlarged on the right side; the largest was the size of a lima bean. Some of them were adherent to one another.

The right submaxillary gland was negative. The left submaxillary gland was the size of a robin's egg, firm and rather freely movable. Above the outer end of the left clavicle there was a nodular mass movable under the skin, hard over the larger nodules, not tender on palpation. The left axillary glands were enlarged; one was the size of a lima bean. The right axilla was negative. Inguinal glands were negative. The thorax was broad and fairly deep. Expansion was small and somewhat diminished over upper left portion.

Percussion: There was a marked relative dullness above the left clavicle caused by the mass described above. Just below the left clavicle down to the second rib, the resonance was diminished. There was a prominence on the upper part of the sternum from ⅛ to ¼ inch above the surface, rounded slightly, more on the left side, due to a thickening felt under the skin. Relative dullness extended over the area. There was a small area of resonance between this and the heart dullness. The percussion of front and sides was otherwise negative. There was good vesicular breathing over front and sides. Over the dull area, the inspiration and expiration were rather harsh. Percussion of back was negative. A few fine râles could be heard at bases on auscultation.

Heart: The apex could not be seen or felt. Sounds were strongest in normal area by stethoscope. There was no increase in dullness. A moderately strong, clear, soft-blowing systolic murmur could be heard along the edge of the sternum. The liver and spleen were not palpable.

Abdomen: Negative.

Urine: Examination of the urine was negative.

Blood counts: Red varied from 4,400,000 to 3,600,000; whites from 7,639 to 2,500; hemoglobin from 80 to 90 per cent.

Differential counts, 500 cells, were made as follows:

	May 7, 1904. Per cent.	May 28, 1904. Per cent.	May 18, 1905. Per cent.
Small lymphocytes	13.6	28	21.58
Large lymphocytes	1.4	8.7	8.56
Transitional	4.4	8.3	58.8
Polynuclear	79.0	48.	
Eosinophile polynuclear	1.6	7.	1.72
Eosinophile mononuclear	...	....	.72
Degenerate	...	....	8.

Treatment.—The patient was treated with *x*-rays every other day over the enlarged glands, from May 6 until June 10.

Course of Disease.—June 10 examination showed that the swelling above the left clavicle had diminished in size. Only two or three glands were adherent, the largest of these being about the size of a small almond. The swelling below the left ear had disappeared. Over the prominence on the upper part of the sternum, the skin was slightly red. The tissue felt thickened. There was no absolute dullness on percussion. The area of relative dullness seemed smaller than before. On the right it extended to the sternal line; dowward to the angle of Ludwig, or about 2 inches below the episternal notch; on the left to the parasternal line. The glands in the left axilla could no longer be felt. The patient left the hospital.

July 13: The patient returned to the hospital complaining of a sense of pressure in the region of the sternum. A gland could be felt above middle of clavicle about size of a pigeon's egg. The *x*-rays were given every other day and arsenic (Fowler's sol.) was administered internally.

October, 1904: The patient was discharged, the glands having returned to normal size.

Jan. 1, 1905: The patient returned to the hospital because of enlarged glands under the left arm and tenderness at times under the upper sternum and in the left supraclavicular space. On examination, the left supraclavicular fossa was found to be obliterated. Just above the left clavicle, there was a gland about the size of a pigeon's egg. Above the middle of the right clavicle, there was a gland the size of a lima bean with one or two smaller ones. High up in the left axilla, there was a gland about the size of a pigeon's egg and of a soft consistency. The prominence of the skin over the manubrium sterni was much less noticeable than on previous admission. There was still a thickening beneath the skin. The area of relative dullness under the upper sternum had not increased in size. There was bronchial breathing over this area, both on inspiration and expiration. The patient received *x*-ray treatments eight minutes in length over enlarged glands and upper sternum. A medium hard tube was used. She received 19 treatments, or a total exposure of 152 minutes. She left the hospital Feb. 5, 1905.

May 18, 1905: After an absence of three and one-half months, the patient returned to the hospital. She had been well most of the time during her absence, but in the middle of March the left side of the neck became swollen and the head could not be turned to left. She suffered great pain on swallowing, regardless of the kind or amount of food taken. Hot applications, poultices and blisters were tried without effect. In 3 or 4 days the swelling began to decrease in size and at the end of a week it was normal. This swelling involved the region between the ear and the glands above the left clavicle and extended around to the median line in front. About May 1, 1905, patient had another attack, in every way similar to the first, and lasting about the same length of time.

Examination by Dr. Dock showed the patient looking about the same as before.

About the middle of the left clavicle there was a prominence from ¼ to ⅜ inch above surface, measuring three inches transversely and 1 1/3 inches vertically. The skin over it was freely movable. The mass was of a moderately firm consistence, rounded and about the size of a small hen's egg. The lower border seemed to extend under the clavicle. Just above the middle of the right clavicle there was a gland the size of a large white bean. The prominence over the upper end of sternum was more marked than before and measured 3½ inches transversely and 2½ inches vertically. The subcutaneous tissue was thickened and tender on pressure. There was relative dulness corresponding to the prominence. No Wintrich's change of sound could be made out. Just under the left anterior axillary fold there was a gland much larger than at time of previous discharge from hospital. It was the size of a hen's egg, very firm, with a small lobule on its outer side. In the right axilla there was a gland just back of the pectoralis major about the size of a pigeon's egg, and freely movable. Above middle of right Poupart's ligament there was a gland about the size of a pigeon's egg, which was very tender on pressure. On the left side there was a gland about half as large as that on right.

Dr. Dock ordered *x*-rays given three minutes over each enlarged gland. The patient was treated with *x*-rays from May 19 daily until July 26, taking in all 50 treatments, each varying from 10 to 35 minutes in length, with a hard tube, 10 inches from the anode. During this time she was exposed to *x*-rays 1,068 minutes.

July 27: The patient was discharged from hospital, feeling well. The inguinal glands were reduced in size to normal. The gland in the left anterior axilla was small and hard. The right axillary gland was also small and hard. The masses above the middle of the left clavicle had disappeared. The prominence over upper sternum had nearly disappeared, there being still a slight thickening. There was no pain or difficulty in swallowing.

Examination of Gland.—On May 31 a small hard lymph gland was removed by incision of skin and fascia just posterior to the right sternomastoid, and was sent to Dr. Warthin's laboratory for pathologic diagnosis. It was found to be a Hodgkin's gland (lymphadenoma) of the D. M. Reed type. A detailed description of the microscopic sections made by Dr. Butterfield of the pathologic department, read as follows:

"The distinction between follicle and sinus is lost. The abnormal elements of the lymph gland are replaced by uniformly distributed cells and a delicate reticulum. The predominating cell possesses a large oval vesicular nucleus with one, or sometimes two, bright nucleoli. These cells vary somewhat among themselves in size and shape. The largest cells are fully from

three to four times the size of the small ones. The protoplasm is fairly abundant, non-granular and eosin-staining. A few of the nuclei are hyperchromatic, but mitoses are rather scarce, only two or three being encountered in a section. Scattered among them is a relatively small number of lymphoid cells of the usual type.

"Bordering on the reticulum, cells with large vesicular nuclei and protoplasmic processes are occasionally seen. Eosinophiles are not found in the sections examined. The connective tissue fibrils forming the mesh-like reticulum are delicate. Coarse bands and hyaline areas are absent. The capsule of the gland is thin and between its bundles of fibers are cords of cells of the lymphoid type. The periglandular fat is not infiltrated.

The predominating cell is usually regarded as being of endothelial origin and corresponds in all respects with the cells described by D. M. Reed, Longcope[1] and others.[2] The section resembles those described by D. M. Reed, but differs in the absence of eosinophiles.

This case is of interest owing to the enlarged lymph glands in the upper mediastinum causing difficulty in breathing and in swallowing, due to pressure exerted on the bronchi and esophagus. These pressure symptoms were entirely relieved by *x*-ray treatment, which caused a decrease in the size of the glands. The much enlarged superficial glands likewise were reduced in size, four different times, by application of the *x*-rays. Each time the patient was discharged with her glands normal in size, but without continued *x*-ray treatment, the glands gradually increased in size again. It is quite probable that the present symptomatic cure will be but temporary unless the *x*-ray treatment is continued often enough to prevent the glandular hypertrophy and hyperplasia.

The blood changes also make a further observation of this case of interest. Fully 10 per cent. of atypical lymphocytes were found in a differential count of 500—this pointing to the possibility that we are dealing with a transition from Hodgkin's disease (lymphadenoma of the D. M. Reed type) to a lymphatic leukemia. The lowest leucocyte count was 2,500 and the highest 7,640. So far there has been no further increase.

SPLENOMYELOGENOUS LEUKEMIA: REPORT OF A CASE UNDER X-RAY TREATMENT WITH CERTAIN BLOOD AND URINE FINDINGS.

Patient.—Mr. J. D. came to the hospital March 3, 1905, because of a dull, heavy feeling in the pit of the stomach, belching of gas and swelling of feet and ankles.

History.—The family history is negative, likewise the early personal history.

Present Illness.—During the last three years the patient has had a distressing, heavy feeling in the pit of the stomach, accompanied by belching of gas. During the past year the pain has come on daily and there has been a loss of 25 pounds in weight.

Examination.—Temperature 99, respiration 20, pulse 78. Present weight, stripped, 135 pounds; height, 5 ft. 8 in. The man's frame was of medium size; panniculus scanty. Muscles were of medium size, soft and flabby. The skin was smooth, dry, elastic, pale and slightly sallow. There was slight edema of the ankles, the left ankle being always swollen more than the right. There were no stiff joints, lymph glands were negative. Pupils were equal and reacted well. Both external jugulars were distended; there was moderate pulsation from clavicles to ears.

Thorax: The thorax is well formed, of fair length and breadth and epigastric angle of 90 degrees. Auscultation and percussion of lungs were negative.

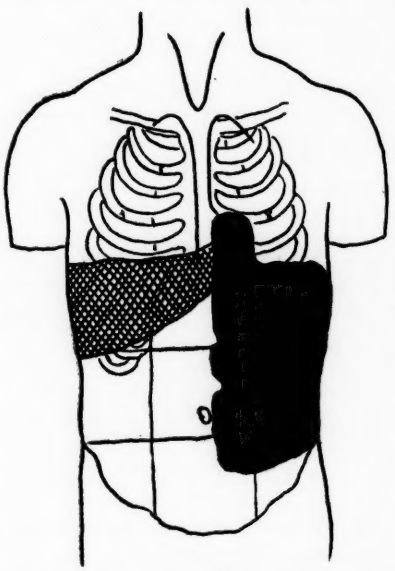
Heart: The apex was visible and palpable in fourth intercostal space, one inch outside of the parasternal line. Dullness was found to begin on the third rib, within 1 cm. of apex, and to extend to the left edge of the sternum. Apex sounds were clear; a soft blowing systolic murmur could be heard over the pulmonic valve, weaker over aortic. The second pulmonic sound was reduplicated.

Abdomen on level of ribs: There was a slight fullness in the left epigastric region between the nipple line and the ensiform appendix, extending to the left sternal line.

Palpation: The abdominal walls were rigid; the right side was negative; the edge of the liver could not be felt. On the left side a firm hard mass could be felt extending from the costal margin; the surface was smooth, border presented a somewhat rounded edge, and the mass descended with respiration. Two notches could be felt on the anterior edge. The mass extended over to the left and down to the level of the anterior spine of the ileum in the left parasternal line. This tumor extended into the left flank and could be felt almost to the midaxillary line where it became indistinct. The outline is shown in diagram. The splenic dullness began at the seventh intercostal space in the midaxillary line and extended straight around to the nipple line, filling Traube's space and being continuous with the dullness over the mass described above. No friction sounds could be heard on auscultation over mass.

Blood count: Reds, 2,500,000; whites, 135,000; hemoglobin, 70 per cent.

Differential count: Small lymphocytes, 2 per cent.; large lymphocytes, 0.4 per cent.; transitional, 2.2 per cent.; polynuclear, 42.6 per cent.; cosinophile polynuclear, 0.2 per cent.; eosinophile mononuclear, 0.8 per cent.; myelocytes, 45.6 per cent.; mast cells, 5.4 per cent.; degenerates, 0.6 per cent.



Diagnosis.—Splenomyelogenous leukemia.

Treatment.—*X*-ray treatment was begun March 20, 1905. The spleen alone and later the spleen and long bones were alternately treated. A hard tube was used, and the area treated placed 10 inches from anode. Each exposure varied from 7 to 15 minutes. During the course of treatment the patient was exposed to *x*-rays about 2,800 minutes. The leucocyte counts taken from time to time are shown in Table 1.

Course of Disease.—The blood condition was rapidly becoming worse at the time of patient's admission to the medical clinic of Dr. Dock; the leucocyte count increasing from 135,000 to 188,000 in four days, without treatment. Notwithstanding the treatment with *x*-rays, the leucocytosis increased until at the end of one month it reached a maximum of 365,000, and at the end of three months' treatment the count returned to about 135,000 again. The condition did not change much for the remainder of the year, the leucocyte count during that period never failing below 100,000 per c.mm. Then the count gradually diminished, falling from 146,420 to 57,320 in one month.

At this time it was deemed advisable to give Fowler's solution in conjunction with the *x*-rays. The Fowler's solution was given for two months, starting with 5 gtt. t.i.d. and gradually increasing until gtt. 15 t.i.d. were given. During this period the leucocytosis dropped from 57,320 to 4,680.

The count has remained normal for over one month, no medicines being given except gr. x. ferrous carbonate for the general condition. It is probable that the leucocyte count would have returned to normal without the use of arsenic, but in this case, as in other cases reported, arsenic seems to have been a valuable adjuvant to *x*-ray treatment.

1. Longcope: Bulletin Ayres Clin. Lab., Vol. 1.
2. MacCallum: "Specificity of Endothelium." Bull. Johns Hopkins Hosp., 1903; Johns Hopkins Hosp. Rep., 1904.

During the course of treatment, a series of differential blood counts were made at stated intervals after *x*-ray exposure, in order to study the immediate effects of the *x*-ray on the blood. The results are tabulated in Table 2.

TABLE 1.—LEUCOCYTE TABLE.

Date.	Whites.	Hbg.	Date.	Whites.	Hbg.	Date.	Whites.	Hbg.
1905.						1906.		
3-16	135000	70	7-15	145150	70	2-12	101860	..
3-18	168000	70	8-26	153750	..	2-13	152783	..
3-19	184000	70	9-9	235000	..	2-14	178250	70
3-22	188000	..	9-20	235000	..	2-15	157870	..
3-26	270000	70	10-17	244400	..	2-16	150240	..
3-27	242000	..	10-22	228300	..	2-18	143875	..
3-28	248000	65	10-31	202000	70	2-19	129840	..
3-29	297000	..	10-31	178000	..	2-20	145150	..
3-30	248800	70	11-27	188440	..	2-21	146420	..
4-1	282000	..	12-8	140155	..	3-14	109500	70
4-2	282000	..	12-9	164230	..	3-15	94120	..
4-3	305000	70	12-11	181000	..	3-21	71300	..
4-5	310000	..	12-14	210000	72	3-22	61120	..
4-6	248000	..	12-14	187000	..	3-23	57320	*
4-7	311000	..	12-16	176000	..	3-27	54750	..
4-9	297000	..	12-17	192000	..	3-28	38195	..
4-12	360000	..	12-19	192255	..	3-29	36925	..
			1906.					
4-15	363100	..	1-1	131000	..	4-4	25464	..
4-16	378000	..	1-10	115860	..	4-5	16552	..
4-17	365500	70	1-12	98400	..	4-6	17061	80
4-18	342500	..	1-15	99125	70	4-9	13243	..
4-19	330500	..	1-26	165266	..	4-10	10443	†
4-20	294200	..	1-29	168170	..	4-11	8405	..
5-1	282000	..	1-30	270460	..	4-12	8150	..
5-15	274000	..	1-31	285230	..	5-16	4680	80
6-6	260000	70	2-2	140055	..	6-1	4800	‡
6-26	252000	..	2-7	124000	..	6-10	5220	..
7-7	133900	..	2-10	132415	..			
6-28	163500	..	2-7	101860	71			
7-11	165380	..	2-11	115865	..			

* Fowler's sol. given 5 gtt. t. i. d., 1 drop increase a day.
† Fowler's solution, gtt 15 t. i. d.
‡ Fowler's solution discontinued.

TABLE 2.—RESULTS OF X-RAY TREATMENT.

Date.	Time.	Time of Exposure.	Leucocytes Total.	Lymphocytes per cent.	Polynuclears per cent.	Eosinophiles per cent.	Basophiles per cent.	Myeloeytes per cent.	Degenerates per cent.
3-27	9 a.m.	8.15	244400	2.4	48.2	1.	5.6	39.6	4.2
	11 a.m.	15 min.	282000	2.5	47.5	1.3	6.2	37.8	4.7
	1 p.m.	.....	300000	2.3	48.0	.5	4.0	36.2	9.0
	3 p.m.	.....	296800	2.8	46.0	.3	5.0	37.2	8.7
	8 p.m.	.....	282000	1.5	50.0	.7	6.0	35.8	6.0
3-28	9 a.m.	None.	248000	2.3	50.0	1.4	5.7	35.5	4.7
4-16	9 a.m.	8.3	278000	2.1	56.4	.7	5.0	32.2	3.6
	11 a.m.	30 min.	280000	2.6	54.8	.4	3.5	32.4	6.3
	1 p.m.	.....	302000	2.5	51.2	.3	4.2	34.0	7.8
	3 p.m.	.....	296000	2.6	54.6	.4	4.4	31.0	7.
	8 p.m.	.....	280000	2.8	53.8	.9	4.7	32.0	5.4

In Table 2 it will be seen that the exposure to *x*-rays, at one time 15 minutes and another 30 minutes, was followed by a gradual increase in the number of leucocytes which reached its maximum about 5 hours after the exposure. The number of degenerates increased in one instance from 4.2 per cent. to a maximum of 9 per cent. and in the other from 3.6 per cent. to a maximum of 7.8 per cent. Nearly all degenerates are disintegrating myelocytes, in many cases consisting only of a remaining network of fibrils. The increase in the number of degenerates seems related to the general leucocyte increase after exposure.

URINARY FINDINGS.

The quantitative estimation of the total phosphates and earthy phosphates was carefully made, in order to determine whether or not the destructive action of the *x*-rays on the white cells and tissues caused an increased elimination of earthy phosphates. As the table below shows, the quantity of earthy phosphates,is, if anything, slightly diminished. This may be due to the fact that the calcium salts are partly deposited in the kidney tissue, and may be the explanation of the calcification found by Warthin[3] in the kidneys of leukemic patients, treated for long periods with *x*-rays.

TABLE 3.—URINARY FINDINGS.

Date.	Amount in C. Cm. 24 hours.	Gms. Total Phosphates.	Gms. Earthy Phosphates.	Albumin.	Casts.
3-19	800	1.60	0.32	Trace.	Few granular.
3-20	750	1.40	0.38	Trace.	Few granular.
3.21	1500	1.25	0.40	Trace.	Few granular.
3-22	1250	1.8	0.29	Trace.	Few granular.
3-24	700	1.18	0.12	Trace.	Few granular.
3-25	1075	1.69	0.10	Trace.	Few granular.
3-27	700	1.78	0.20	Trace.	None.
3-28	1000	2.3	0.40	None.	None.
3-29	925	1.99	0.30	None.	None.
3-30	1175	.90	0.17	None.	None.
3.31	700	1.00	0.16	None.	None.
4-1	870	.70	0.17	None.	None.
4-6	1400	1.4	0.12	None.	None.
4-8	925	.88	0.20	None.	None.
4-10	1200	1.5	0.20	None.	None.
4-14	1050	1.4	0.11	None.	None.
4-18	1250	1.3	0.12	None.	None.

SUMMARY.

1. The beneficial therapeutic value of *x*-ray treatment in Hodgkin's disease is well demonstrated in the case reported. The decrease in the glandular enlargement was comparatively rapid, but the enlargement will probably recur unless *x*-ray treatment is persisted in.

2. In the case of leukemia, for a long time the *x*-ray treatment did not inhibit the further progress of the disease process, as is indicated by the great increase in the leucocytosis for three months after treatment was begun. After using the *x*-ray treatment systematically for over one year, the leucocyte count finally returned to normal. This was not accompanied by much decrease in the splenic enlargement. The use of arsenic as an adjuvant to *x*-ray treatment seemed of much benefit.

3. The immediate effect of *x*-ray treatment is to increase the number of leucocytes in the general circulation. This increase is accompanied by a large increase in the number of degenerate cells, most of which are disintegrating myelocytes. No toxic symptoms have developed during the long course of treatment. Although the leucocyte count has remained normal for a period of two months, the patient was advised to continue the use of the *x*-rays at intervals to prevent a recurrence of the blood condition.

Cornwell Place.

POLYCYTHEMIA.*

WILLIAM ENGELBACH, M.D.
AND
ORVILLE HARRY BROWN, M.D.
ST. LOUIS.

In 1892 Rendu and Widal reported the discovery of a peculiar condition characterized by the rare combination of chronic cyanosis, enlarged spleen and increased number of the erythrocytes occurring with primary tuberculosis of the spleen. In 1899[1] they reported two similar

3. International Clinics, Vol. V.

* Read before the St. Louis Medical Science Club.

* From the Jewish Hospital Dispensary and St. Louis University.

1. Rendu and Widal: "Splénomégalie tuberculeuse sans leucémie avec hyperglobulie et cyanose," Bull. Soci. méd. des hôp., III Ser., 1899, p. 528.

cases. In 1904 Turck[2] reported seven cases and reviewed exhaustively thirteen cases reported in the literature up to that time (Vaquez,[3] M. Martin and Lefas,[4] Cominotti,[5] Cabot,[6] 2; McKeen,[7] Saundby and Russell[8] 2, Rosengart,[9] Osler[10] 4). In 1905 Reckzeh[11] reported five cases, presented some experimental results on the production of this condition on animals and reviewed the literature of twenty-nine cases previously reported. This makes in all a total of thirty-four cases so far reported.

REPORT OF AUTHORS' CASE.

Patient.—Mrs. E. S., aged 40, housewife. Russian Jew.

History.—Family history was negative. Until her thirtieth year she had uninterrupted good health. From that time she dates the beginning of a chronic headache, vertigo and a noticeable diffuse redness of the skin. About five years ago she had a Ménière-like attack of vertigo, which was described as a "sudden rush of blood to the head," causing extreme vertigo and excruciating headache. This lasted about one minute and was suddenly succeeded by a syncopal sensation, without unconsciousness, followed by marked general weakness. A feeling of anxiety and premonition of death was marked during the attack. About this time she noticed for the first time a "lump in her side" (below the left costal arch). In 1902, she presented herself at the Jewish Hospital Dispensary, from the records of which we collected the following history and findings up to Dec. 10, 1905. Her complaint at that time was headache, vertigo, pain in the region of the ovaries, poor appetite, general weakness and a progressive loss of weight during the preceding two years.

Menstrual History: Three normal births (no puerperal hemorrhages). Menses were normal until two years previous when periods became irregular, being absent for two or three months and followed by a scanty menstrual discharge of from two to four weeks' duration, accompanied by more or less pelvic pain.

Physical Findings: Nutrition fair. Color good. Pulse 96. Temperature 99.4. Heart and lungs normal. Abdomen relaxed and tender on pressure. Spleen enlarged. No plasmodia in blood.

Gynecologic examination (Dr. Ehrenfest): "Uterus large; surface smooth. Cervix large, with small erosions. Adnexa normal. Curettement tissue, normal histologically." Quinin gr. v., t. i. d.; increased headache and vertigo. In 1903 she had a severe, prolonged hemorrhage following the extraction of a number of teeth. During the same year she was confined to bed for two weeks with severe cramps in the calves of the legs.

March 22, 1904: "Abdominal pain, headache, poor appetite and the usual menstrual disturbances" are recorded.

Dec. 6, 1904: "Spleen still enlarged. Liver in a state of ptosis. Pain in the cardiac region. Some cough and expectoration. Temperature 98.6." The following year she visited the dispensary occasionally still complaining of the above symptoms in more or less severity with no new physical findings.

On Dec. 10, 1905, she complained of the following: Ever constant headache; vertigo; burning and sensory disturbances of the skin; poor appetite; "cramps" in the abdomen; dragging pain in the back and left side; frequent burning micturitions; amenorrhea two months; insomnia; general weakness and debility. The cough and expectoration of previous years had been of short duration.

Examination.—This showed a poorly nourished and developed neurotic woman of small stature. There was diffuse dusky-red discoloration of the skin turning to purplish-red in hands and lips, increased by emotional influences. Pulse was 86; temperature 98.4; respiration slow and regular.

Scalp: The scalp was tender, more marked on the left side. The ears were a translucent red.

Face: There were mild diffuse cyanosis, dilated venules also on cheek and nose, and tenderness and hyperesthesia on the left side about the eye. The conjunctiva was injected. Pupils were equal and reacted to light and accommodation. Movements of the eye-lids and the eyes were normal. Fundus was dark red; the disc was pink, veins were large and dark blue. The lips were purplish red, the gums, dusky red. Tongue was clean, purplish red. Mucous membrane of mouth was dark red. The tonsils were not enlarged.

Neck: The veins were not dilated or pulsating, there was no murmur or hum, and no glands were palpable. The thyroid was not enlarged.

Chest: Lungs were normal; no emphysema. The apex beat was in the sixth left interspace in the nipple line, it was circumscribed, forcible and compared well with the pulse. The dullness extended to the apex beat on the left, to the lower margin of the third rib above and to the mid-sternal line to the right. Upper sternum was not dull. Sounds were pure, distinct and rhythmical; the second aortic was slightly accentuated. There was no arteriosclerosis. Blood pressure was from 135 to 140.

Fluoroscopic Examination (Dr. Carman): "No abnormal shadows over lungs on mediastinum. Heart reaches just beyond the nipple line, sixth interspace to the left and just beyond the midsternal line to the right."

The splenic shadow corresponded to the description below. Abdomen was relaxed, full in upper third, and tender on the left side. No ascites. Liver, superior border reached sixth interspace, the lower border one finger below costal arch in the mammary line; the margin was blunt, no irregularities, tenderness or pulsation.

Gall bladder was negative. The spleen was greatly enlarged, extending to the mid-line of the abdomen to the right and the lower pole reached to the level of the umbilicus; the notch was palpable on the right border just below the costal arch. Surface was smooth; consistency firm, there was tenderness on pressure; the organ was easily movable; there was no peritoneal friction rub. Hemorrhoids were present.

There was tenderness over the sternum and other superficial bones. The legs were not cyanosed; there were no varicose veins. The toes were slightly cyanosed and cold. Other findings were practically normal. There were no abnormal muscle or joint findings, no edema. Glands were not enlarged. Reflexes were present and equal; there were no other sensory abnormalities.

Urine (single specimens, not catheterized): Yellow color. sp. gr. 1,007. Albumin, a trace; albumoses negative; blood negative; sugar negative; urobilin negative; casts negative; epithelium and leucocytes present.

Blood Examination: Erythrocytes 10,909,000, leucocytes 9,600, hemoglobin above 120.

Course of Disease.—From December 10, symptoms did not materially change. Constant headache and vertigo more or less severe, and attacks of pain in the left side of the face, about the eyes and in the upper jaw were constant complaints. Pain in the left hypochondrium and back occurred frequently. Appetite was poor, and there was discomfort and pain in the stomach and sometimes abdominal "cramps." She vomited once, a yellowish substance containing no blood. There were the usual menstrual disturbances previously described. Prolonged scanty menses produced no change in blood findings. The diffuse cyanosis and enlargement of the spleen were sta-

2. Turck: Beiträge zur Kenntniss des Symptomenbildes "Polycythämie mit Milztumor und Zyanose," Wien. klin. Wochschr., 1904, Nos. 6 and 7.

3. Vaquez: "Cyanose accompagée d'hyperglobulie excessive et persistante." Société de biologie, 7, V, 1902; and "Hyperglobulie et splénomégalie," Bull. Soc. méd. des hôp., 1899, p. 579.

4. Martin and Lefas: "Tuberculose primitive et massive de la rate," Bull. Soc. méd. des hôp., 1899, p. 547.

5. Cominotti: "Hyperglobulie und Splenomegalie," Wien. klin. Wochschr., 1900, No. 39.

6. Cabot: "A Case of Chronic Cyanosis Without Discoverable Cause, Ending in Cerebral Hemorrhage," Boston Med. and Surg. Jour., 1899, vol. cxli, No. 29, and vol. cxlii, No. 11.

7. McKeen: "A Case of Cyanosis Difficult to Explain," Boston Med. and Surg. Jour., 1901, p. 610.

8. Saundby and Russell: "An Unexplained Condition of Chronic Cyanosis, with the Report of a Case," Lancet, 1902, p. 515.

9. Rosengart: "Milztumor und Hyperglobulie," Mitteilung aus den Grenzgeb. d. Med. u. Chir., 1903, vol. ii.

10. Osler: "Chronic Cyanosis with Polycythemia and Enlarged Spleen," Amer. Jour. of Med. Sciences, August, 1903.

11. Reckzeh: "Klinische und experimentelle Beiträge zur Kenntnis des Krankheitsbildes der Polyzythämie mit Milztumor und Zyanose." Zeitschr. f. klin. Med., 1905, vol. lvii, Nos. 3 and 4.

tionary. General weakness and debility was marked so that the patient was frequently confined to bed for a few days. Temperature was never above 98.6. Pulse ranged from 80 to 90. Respiration was never increased or irregular.

BLOOD FINDINGS.

Date.	Source of Blood.	Erythrocytes.	Leucocytes.
Dec. 10, 1905	Finger	10,009,000	9,600
Dec. 11	Finger	10,666,000	....
Dec. 25	Finger	10,908,000	6,600
Dec. 30	Finger	10,004,000	7,400
Jan. 14, 1906	Finger	9,698,000	8,400
Jan. 25	Ear	8,037,000	9,400
Feb. 25	Toe	10,320,000	8,500
Feb. 25	Ear	10,648,000	8,640
Feb. 25	Finger	12,584,000	7,800

Average of the three taken at same time, Feb. 25, 1906, 11,150,000 erythrocytes; 8,313 leucocytes.

Macroscopically the blood was deep, dark-red in color and very thick. It flowed sluggishly and spread with difficulty between cover glasses. Coagulation time, four minutes (1 mm. tube).

Hemoglobin:[12] Nine estimations taken at different times and from different parts of the body ranged between 180 and 200 per cent. One estimation from the ear was 150 per cent.

Color index, 1 or slightly above 1. Specific gravity, from 1065 to 1075 (one estimation of 1058 was made, but was considered low on account of technical error). The spectroscope gave bands of oxyhemoglobin.

Fresh Drop: The cells were crowded closely together; equal in size; symmetrically round in form; color dark, going to center of cell. No apparent increase in leucocytes. Polymorphonuclear cells predominated among the whites. Stained specimens invariably gave the following differential count: Lymphocytes, 11 to 14 per cent.; small, 11 per cent.; large, 3 per cent.; leucocytes, 9 to 11 per cent.; transitional, 6 per cent.; mononuclear, 5 per cent.; polymorphonuclear, 75 to 76 per cent.; eosinophiles, 1 to 1.5 per cent.; polychromatophylic erythrocytes, a few. Mast cells were not increased; there were no myelocytes or erythroblasts.

Treatment.—This has been entirely without results. Quinin, gr. V. t. i. d., increased vertigo and headache. Administration of salicylates, iron and tonics for a long time had no favorable effect. Caffein, bromids and sedatives did not decrease the symptoms. Nitroglycerin, 1/100 gr. every hour for two days produced no change in the symptoms. Valerianates, hydrastis, etc., did not alter the condition. Fowler's solution gtts. xxx daily for three weeks caused no change in the clinical symptoms or blood findings. Three *x*-ray exposures over spleen, of five minutes duration, and two exposures over the face produced no change in the symptoms or blood findings. We wish to take this opportunity of expressing our indebtedness to the authorities of the Jewish Hospital Dispensary for the privilege of reporting this case. Especially to Dr. J. Myer do we feel grateful for the many favors shown in connection with the preparation of this report.

NOMENCLATURE.

Enough of these cases have been reported to establish this condition as a clinical entity. On account of its obscure nature, however, the terminology has been variable. Some of the titles under which the cases have been reported are the following: "A Case of Marked Cyanosis Difficult to Explain." "Unexplained Condition of Chronic Cyanosis." "A Case of Chronic Cyanosis Without a Discoverable Cause." "Polycythemia and Enlarged Spleen." "Polycythemia, Enlarged Spleen and Chronic Cyanosis." "Polycythemia with Splenomegalie," etc., etc. Some writers have referred to it as "Vaquez disease." Since Osler's splendid article some of our own countrymen have suggested the name of "Osler's disease." Turck,[13] considering that the condition has the same relation to the erythroblastic myeloid tissue that myelogenous leukemia bears to the leucoblastic marrow suggests the name of "erythemia" or "erythrocythemia." Polycythemia, while it is only one of the cardinal findings and does not include the other constant findings or, as yet, an established pathologic basis, has become by usage a rather popular term for this syndrome.

ETIOLOGY AND PATHOLOGY.

On account of the variety of pathologic findings no definite etiology has yet been established. There are no constant predisposing causes in the cases so far reported. Heredity and previous diseases bear no relation to this condition. In three cases it followed tuberculosis of the lungs; malaria in one; syphilis in one; organic heart disease (postmortem) in one; primary adenoma of liver was present in one (Turck); malignant tumor of the thymus one case (Reckzeh[11]). The age at which it appears has been previously considered to be between thirty-five and sixty, but Turck's report shows that it occurs at early adult life. Reckzeh reported one case in a child of 10 years old. Weil reported two cases of congenital cyanosis with enlargement of the spleen in the absence of heart lesions, in one of which at autopsy pathologic changes of the thymus and bone marrow (macroscopically) were found. If these cases can be accepted it may be said that it does occur in infancy. As to sex Osler's report gives it as occurring most frequently in the males. But analysis of all the cases shows it to be about equally divided between the sexes.

Singularly enough, in the first three cases reported there was found a primary fibrocaseous tuberculosis of the spleen. Collet and Gallarandin reported a case of tuberculosis of the spleen which showed clinically a deep red skin, progressive emaciation and dark red blood. (No blood examination). Cominotti's[5] case presented at postmortem fibrous splenitis, small nodes of hyperplastic parenchyma cells in liver and caries of spine (no histologic examination). Scharold reports a case of miliary tuberculosis characterized clinically by pigmentation and cyanosis (no blood examination reported). Widal, regarding the pathogenesis, says that it is a functional activity of the marrow probably caused by the decreased function of the spleen due to tuberculosis of that organ. Vaquez says that the blood-forming organs must play a rôle, primarily or secondarily, on account of the polyglobulism. He thinks that the cyanosis is an accidental condition and need not necessarily be present. These findings led the French to conclude that primary tuberculosis of the spleen was the cause of this peculiar syndrome. Since then, however, many cases have come to autopsy in which no tuberculosis of the spleen or other organs has been found.

Turck in his conclusion says: "Naturally I can draw no positive conclusion. I can say that tuberculosis of the spleen, although demonstrated in some cases, will not explain the condition. The symptom complex has been reported with different causes. In some cases a splenic and in some a combination of splenic and liver involvement of a yet unknown character have occurred with the symptom complex. In my opinion, the most probable explanation of this syndrome is a primary hyperplastic affection of the erythroblastic myeloid tissue with histologic changes in the spleen (and liver not yet demon-

12. The blood was diluted with an equal amount of n/8 NaCl solution and the estimation of this dilution by Dare's hemoglobinometer multiplied by two. This method was proved to be accurate by numerous estimations on dilutions of normal blood.

13. Turck: "Splenomegalie Hyperglobulie und Zyanose," Mitt. d. Wien. Geselsch. f. inn. Med., 1902, Nos. 6 and 7, Wien. klin. Wochschr., 1902, No. 14 and No. 6.

strated.)" He argues in support of this theory that: 1. A number of cases have come to postmortem presenting no tuberculosis of the spleen. 2. No other one pathologic finding of the spleen reported will explain this condition, as the findings of that organ are variable. 3. In three cases the liver was found to be enlarged before the spleen. 4. No other organs than the liver and spleen have been found affected which would explain the condition. 5. The blood findings have shown a hyperplasia of the erythroblastic marrow, with also an accompanying hyperplasia of leucoblastic bone marrow. 6. A hyperplastic condition of the erythroblastic myeloid tissue has been found in some of the cases postmortem. 7. Rosengart found in one case blood cells and changes in the spleen and liver histologically (derived from hyperplastic erythroblastic myeloid tissue). The demonstration of the last two points, he thinks, has substantiated his theory that the changes in those organs (spleen, liver and bone marrow) are analogous to the changes which take place in them with hyperplasia of the leucoblastic myeloid tissue in myelogenous leukemia. Turck's blood findings, however, do not correspond with the findings of other writers. He found a leucocytosis and evidence of hyperplasia of the leucocytic myeloid tissue (increase of the granular leucocytes; polymorphonuclear, mast cells and myelocytes) and erythroblasts; and it is these elements which Rosengart found histologically in the spleen, that form a basis for Turck's hypothesis. With the exception of Cabot's one case, however, these blood findings do not occur in the records of other men.

Reckzeh[11] believes that the stagnation of the blood is the probable cause. He says that it is an established fact that the syndrome has occurred in tuberculosis of the spleen, but it is also a fact that it has occurred in absence of tuberculosis of the spleen. He reports a case of a malignant tumor of the thymus causing compression of the superior vena cava having cyanosis, enlarged spleen and polycythemia. His experiments on animals confirmed his belief that compression producing stagnation of the blood was sufficient to produce the syndrome. He says that diminished tonicity of the veins may result in sufficient stagnation of the blood to produce the condition. Turck[13] claimed that up to the time of his article all writers were certain that the blood findings were not those of stasis. Reckzeh's case, in which there was a demonstrable cause (malignant tumor of the thymus) producing a stagnation of blood might not be accepted, especially by the American writers, who have rather considered the absence of a mechanical cause as one of the positive findings. Furthermore, this case showed polycythemia only in the upper part of the body which was affected by the venous obstruction; the lower part giving a blood count which would be barely above normal (4,400,000, 6,800,000). The spleen in this case was hyperemic and only slightly enlarged. He had a slight degree of success in only two of his animal experiments. While he produced the clinical symptoms of dyspnea, cyanosis and venous dilatation in both, the polycythemia was only 6,000,000 in one case and 6,200,000 in the other.

Cabot's[6] one case presented at postmortem, meningeal hemorrhage and passive hyperemia of the organs. Zemlich[14] reports one case in which death took place from cerebral hemorrhage. Saundby and Russell[8] reported one case showing spleen of 1440 gm.; normal consistency, no tuberculosis, old mitral heart lesion; liver large and firm, 1890 gm., brain congested, arachnoid opaque; marrow of femur normal macroscopically (no histologic examination made). Russell suggests a careful examination of the suprarenal bodies in order to account for the extreme muscular weakness.

Further investigation consisting of careful clinical examination including a comparative analysis of arterial, venous and capillary blood taken from different parts of the body at the same time, estimations of the viscosity of the blood, blood culture and inoculations, etc., and complete histologic examination of bone marrow, spleen, thymus, liver, adrenals and other tissues will no doubt do much to clear up the pathology of this condition. Then the establishment of an anatomic basis will only open the field for more investigation on the etiologic factors producing the pathology.

ANALYTIC SUMMARY OF CLINICAL FINDINGS.

An analysis of twenty-five cases shows the clinical findings to be variable. Common to the majority of cases are cyanosis, enlargement of the spleen, headache, vertigo, and the blood findings of polycythemia without a positive mechanical or accepted anatomic cause. Diffused marked cyanosis occurred in twenty-one cases; localized or mild cyanosis occurred in three of the others. Dilated venules were common to practically all clinically, and venous congestion was a common postmortem finding. Enlargement of the spleen occurred in twenty-one cases, accompanied in the majority and preceded in a few by enlargement of the liver. In the majority of cases the splenic enlargement was moderate and in only two was the liver enlargement excessive. Localized pain and tenderness in the region of the spleen and pressure symptoms from that organ were reported in nearly all the cases. Headache of a chronic and constant type was present in twenty. Vertigo was noted in sixteen, and in five of these, paroxysmal attacks simulating Ménières disease occurred. Besides these symptoms, general weakness, disability and greater or less sensory disturbances were marked complaints. The blood findings in general showed polycythemia or polyglobulism. This increase of the erythrocytes and other elements of the blood is not confined to any localized area of the body, but is diffuse or generalized. The number of red cells varied from 5,300,000 (Cominotti[5]) to 12,000,000 (Cabot[6]); average 8,500,000 to 10,000,000. These were normal with the exception of a few cases in which erythroblasts and polychromatophilic cells were reported (Turck and Cabot). The leucocytes varied from 4,000 to 31,000. In half the cases they were not increased above normal. The differential count in the majority of cases was practically normal. Turck found in his seven cases an increase of the granular leucocytes (polymorphonuclear 92 per cent. in one case) and a decrease in the lymphocytes. The latter seems to be a constant finding in a greater or less degree. A few myelocytes were found in all of Turck's cases and in one by Cabot. Blood platelets were found to be increased in number. The hemoglobin percentage was usually markedly increased; the average was from 120 to 180 per cent. Cominotti reported one case in which it varied from 70 to 80 per cent; and Rosengart one case in which it was 200 per cent. Specific gravity was usually increased, varying from 1053 to 1083. Spectroscope examination, when made, showed oxyhemoglobin. Reckzeh found blood serum increased one per cent. in one case.

Among the less common symptoms, the following have been reported: Symptoms of cerebral congestion in a number of cases; edema of the brain, one case; cerebral

14. Zemlich: New York Med. Jour., Oct. 14, 1905.

hemorrhage, one; paraphasia, two; paralysis, two; one of which was hemifacial; neuralgia of face, two; tuberculosis of the lungs, one case; bronchitis, four; emphysema, not marked, two; dyspnea, three; edema of lungs, three. The heart was frequently found enlarged, with a systolic murmur at the apex in a few cases; the second aortic sound was accentuated in some cases and there were changes in the mitral valve in one; the heart was competent in all cases. Arteriosclerosis was present in four cases; the pulse was not increased in frequency or arrhythmic; it was generally of high tension. Blood pressure was usually increased, but was not so high as might be expected, averaging from 135 to 140. Hemorrhages were not especially frequent. Epistaxes occurred in a few cases; constant oozing from gums in one case; hemorrhage (severe) after extraction of teeth, two cases; hemoptysis, one; hematemesis, two; bloody stools, there was a marked involvement of the liver. Indican occurred in two cases; in one in large amount. The specific gravity was usually low. Casts were present in some of the cases. In many of the cases the urine was normal. Among the symptoms of the special sense organs, the conjunctiva was injected in many cases. Fundus was usually deep red, the veins were generally enlarged, dark purple and sometimes tortuous. Tinnitus was not frequent. Besides cyanosis brown pigmentation of the skin occurred in some cases. Tenderness of the bones was marked in a few cases. Erythromelalgia occurred in the onset in one case. Glands were usually not affected, but were enlarged in one case—probably specific; there was regional involvement from malignant tumor of thymus in one case. The thymus was affected (postmortem) in two cases. Temperature and respiration were normal in the majority of cases.

REPORTED CASES.

Author.	Number of Erythrocytes.	Size and Form of Erythrocytes.	Normoblasts.	Polychromatophiles.	Number of Leucocytes.	Lymphocytes.	Leucocytes Mononuclear and Transitional. Per cent.	Polymorphonuclear. Per cent.	Eosinophiles. Per cent.	Mast Cells. Per cent.	Myelocytes. Per cent.	Hemoglobin. Per cent.
Turck, 1.	9,965,000	Normal.		Few.	33,800			90			1	140
" 2.	7,500,000	Few microcytes.										112
" 3.	8,220,000	Many microcytes.	Few.		12,300	6	11	75	Not included.	1.1		180
	10,625,000	Many poikilocytes	"		19,000	6	11	85	" "	2.3		180
" 4.	8 430,0 0	Few microcytes.	"		20,400			80	3	1.9		25 gm†
	9,670,000	" "	"		26,700			84	4	3.7		25 gm†
" 5.	8,043,000	" "	"	Constant	16,500			81	Not+	Not	Few.	26 gm†
	9,350,000	" "	"	"	30,000			92	+	+	"	
" 6.	7,704.000	" "	"	"	9,200			82	Not+	Not	"	20 gm†
	8,024,000	" "	"	"	12,100			90	+	+	"	
" 7.	9,700,000	" "	"	Few.	31,500	4	6.8	87	6.8	1.4	"	19 gm†
	10,426,000	Few poikilocytes.	"	"	36,300	4	6.8			1.4	"	
Reckzeh, 1.	6,500,000	Normal.			18.730				Few.			125
	12,500,000	"			25,000							120
" 2.	10,000,000	"			10,000	2	23	73				120
	10,800,000	"			10,200	2	23	75				
	Above 5,400,000	"			Tumor* ab've 6,200	6	18	80				100
" 3.	" 7,100,000	"			" " 15,000	6	18					
	Below 4,400.000	"			" below 5,200	6	18					
	" 6,800,000	"			" " 12,000	6	18					
" 4.	10,600,000	"			11,000	4	24	75	1			120+
" 5.	10.200,000	"			11,000							125+
Osler, 1.	9,952,000				4,000				1.8			120
	7,172,000				21,800	14	4	79	.5			120
" 2.	10,200,000				23,000							125
	10,616,000				5.100		11	59				120
" 3.	11,692,000				5,100							
" 4.	8,250.000				8,300							
	9.252.000		Few.		5,800	15		80	3	.8	Few.	110
Cabot, 1.	12.000.000		"		10,600						Few.	120
" 2.	10,462,000				20,000							150?
Russe and Saundby	19,000,000	Normal.			Not increased							120+
McKeen.	9,380,000				9,000	18		74	2			120
	9,480,000											120
Zemlich.	6,480,000				13,200	12	5	85	2.5			120+
	9,240,000											120+
Cominotti, 1.	5,300,000	Few macrocytes			6,000							70
" 2.	7,500.000				3,000							80
	5,500.000				7,500	47?	2	40	10			60
Engelbach and Brown.	8,037,000	Normal.	None.	Few.	6,600	11	9	75	1	Few.		180
	12,584,000	"	"	"	9,600	14	11	76	1.5			200

* Malignant tumor of thymus gland.

† F. Miescher's

one; genital hemorrhage (not occurring at labor), three; hemorrhages of skin, one. Among the gastrointestinal symptoms appetite was usually poor; stomach symptoms frequent; vomiting occurred in a few cases; constipation was common. Genital symptoms were usually negative, but in three cases seemed to bear some definite relation to the onset of the disease. The condition followed early menopause in only one case, and was associated with irregularity of menses and menorrhagia in three cases besides the one reported in this article. The urinary findings were abnormal in about one-half of the cases; one case followed nephritis. Albumin was present in over half of the cases; in large amount in a few. Albumoses are not reported. Urobilin is reported present in the majority of Turck's cases and in a few others in which

COURSE OF DISEASE.

The general course of the disease is progressively worse, with remissions of short duration. The most acute case was one of three months (Turck). The average duration was from six to eight years. Vaquez reports a patient living after the presence of symptoms for ten years. In the case reported in this article the patient has had symptoms for eleven years and is still able to do housework except during acute exacerbations.

DIAGNOSIS.

A positive diagnosis is made on the findings of chronic cyanosis, enlargement of the spleen and polycythemia without an anatomic explanatory cause. The cyanosis may not be generalized as some patients have shown it

only on the mucous membrane. Enlargement of the spleen may be slight and was entirely absent in two otherwise typical cases. On account of the treatment and prognosis an effort to diagnose primary tuberculosis of the spleen should be made. Reckzeh comments on the impossibility of such a diagnosis even after an exploratory incision. He says that primary tuberculosis of the spleen occurs in acute cases, as reported in one case by Scharold, in which death took place in seventeen days. Also that in the chronic form there may be only a gradual enlargement of the spleen without temperature or any other general or local sign upon which to base a diagnosis. He further suggests caution as to exploratory operation on account of the hemorrhagic diathesis. The number of erythrocytes must be increased to at least 8,000,000 per cm. m. (Reckzeh), and this condition of the blood must be diffuse as to body location. (This limitation of the number of red cells and the distribution of the polycythemia would exclude one of Reckzeh's own cases as well as some that have been reported by other men).

Differential Diagnosis.—Other conditions causing chronic cyanosis must be excluded. Among these are abnormalities of development of the heart and aorta; patent foramen ovale and ductus arteriorus, stenosis of conus of pulmonary artery, imperfect ventricular septum, and congenital dilatation of aorta; organic heart disease, congenital or acquired; adhesive pericarditis; aneurism; emphysema; and eccentric causes; growths, exudates, etc., causing stasis of venous circulation from pressure. All other enlargements of the spleen are easily differentiated from this condition by the blood findings. Enlargements, displacements and deformities of the liver due to other causes must be differentiated because in some of the cases enlargement of the liver was the first sign discovered. A great many other conditions presenting abnormal increase in the number of erythrocytes must be excluded. An excessive elimination of the fluids from the blood, as severe diarrhea, dysentery, cholera and diabetes may show polycythemia. The use of Levico-water was produced it (Donke and Ewald[5]). Any condition causing impeded circulation may cause polycythemia, as well as cyanosis. Lauselt demonstrated this in organic heart disease. Arsangeli first claimed that it is produced by compression. Compression of bandages of an extremity has produced a slight localized polycythemia. Boston says that in cases of cyanosis there is likely to be an increase in the erythrocytes in the peripheral blood. In a case of anemia with cyanosis of the extremities the finger count was 4,600,000 and that of the ear 1,800,000. (This point must be considered in every blood examination.) Chronic lung disease has given polycythemia as high as 9,000,000 (Toisson, Vaquez, Pelet, Krehl, A. Tusti, Carnuhaci). Lues has also shown this increase in red cells (Verault, Meruer, Egger, Wolf, Koeppe, Jaruntawski, Schroeder). Addison's disease, besides having a pigmentation which may also be present in this disease, may have marked polycythemia (7,700,000, Neuman). Abnormally high red-cell count has been demonstrated in a paralyzed extremity. Obesity may also have this blood finding. Of the intoxications, carbon monoxid, ether anesthesia and phosphorus poisoning (Jaksch, 8,250,000) have shown increased number of red cells. The polycythemia of high altitudes and early infancy is well known. This condition is easily differentiated from other local and general conditions causing headache and vertigo by the presence of chronic cyanosis and the blood findings. It is also easily separated from other obscure blood diseases by careful blood examination.

PROGNOSIS.

The prognosis is absolutely bad as to cure. Nearly all cases have slowly progressed to a fatal termination.

TREATMENT.

The treatment has been very unsatisfactory. Quinin and arsenic produced no good results (Reckzeh). Ehrlich recommends a diet containing not more than 6 mg. of iron (Bunge table). Turk got good results in two cases from Fowler's solution—30 gtts. daily for a prolonged period. In both cases the red cells were decreased about 2,000,000 and the spleen decreased in size and symptoms subsided in one of them. Nitrites and aconite have been recommended to reduce the blood pressure. Osler observed the disappearance of headache after administration of the nitrites. Cabot says that the use of thyroid extract for three months produced no favorable results. Venesection has afforded a temporary relief, but has caused no marked change in the blood findings. Vaquez and Laubry[15] noted improvement of general symptoms in one case after three *x*-ray exposures at seven-day intervals, the blood findings remaining unchanged. Reckzeh reported three cases of splenectomy for isolated tuberculosis of the spleen resulting unfavorably and eight cases of isolated tuberculosis of the spleen resulting in a cure. Cominotti reported two splenectomies for this condition, one resulting unfavorably from late infection (52 days after operation). One patient survived the operation, but at the end of a year's time the blood findings showed polycythemia, with no increase of the leucocytes.[16]

ADDENDUM.—Since this article went to press another article on Polycythemia, with special relation to the etiology of "Migraine ophthalmique" has been reported by Köster.[17] He adds another case, reviews twenty-eight cases found in the literature, and gives some additional references.[18]

506 Mermod-Jaccard Building.

15. Vaquez and Laubry: "Cyanose avec Splénomégalie et Polyglobulie," Trib. Méd., 1904, No. 33.

16. Other articles on this subject are: Breuer: "Polycythaemie mit Splenomegalie," Mitt. d. Wien. Gesellsch. f. inn. Med., 1903, No. 16. Weintraud: "Polyglobulie und Milztumor," Zeitsscht. f. klin. Med., vol. lv, p. 91. Preiss: "Hyperglobulie und Milztumor," Mitt. aus den Grenzgeb. d. Med. und Chir., vol. xiii. Zaudy: Wien: klin. Wochschr., 1902, p. 102. Schmidt, R.: "Erythrozytose (Hyperglobulie) und Milztumor," Münch. med. Wochschr., 1904, p. 1207. Kikuchi: "Fall von Polycythämie," Prag. med. Wochschr. Dr. Joseph Sailer reported 2 cases before Gen. Med. and Phys. and Surg., Feb. 13, 1905. Ascoli, M.: Riforma Medica, Dec. 21, 1904.

17. Münch. med. Wochenschr., No. 22 and 23, 1906.

18. Deruschinsky: Dritter Kongress russischer. chirurgen in Moskau, 18-21, xii, 1902; Collins: New York Med. Record, lxiv, 21, 1903; Frommherz: Münch. med. Wochenschr., No. 40, 1903; Zaudy: Schmidts Jahrb., vol. 286, No. 4, 1905.

Differential Diagnosis of Pneumonia and Pleurisy with Effusion.—Differentiation is sometimes very difficult, and in such doubtful cases Favitzky recommends Leube's sign for differentiating a cavity in the lungs from pneumothorax. Auscultation of the lungs in pneumonia reveals bronchial respiration which is heard directly under the ear of the physician, and if the patient coughs numerous râles are to be heard simultaneously and close to the ear. In pneumothorax and in pleurisy with effusion the râles sound as if they were at a great distance from the ear of the examining physician. This peculiarity of auscultation is a certain sign for differentiating pneumonia from those cases of pleurisy which present the clinical picture of pneumonia, when even an exploratory puncture may not prove decisive. His communication is published in the *Russky Vrach.*, No. 20, 1906.

A STUDY OF ACUTE LEPTOMENINGITIS (*STREPTOCOCCUS PYOGENES*).*

E. E. SOUTHARD, M.D.

Assistant Professor of Neuropathology, Harvard University Medical School, Pathologist to the Danvers Insane Hospital, Second Assistant Visiting Pathologist, Boston City Hospital.

AND

R. R. STRATTON, M.D.

Voluntary Assistant in Neuropathology, Boston City Hospital.

BOSTON.

The present report comprises a series of human brain infections with *Streptococcus pyogenes,* together with the results of experimental inoculation of streptococci in the brains of guinea-pigs. The human cases have been studied histologically with particular reference to, first, the age of the exudations; secondly, certain prominent vascular lesions; thirdly, the neuroglia reaction. The guinea-pig tissues are of value mainly in the study of the exudation. The work has been carried on with methods like those employed in two previous studies, on infections with *Staphylococcus pyogenes aureus*[1] and with pneumococcus.[2]

We have little evidence to bring on the vexed question of the relationship of pneumococcus and streptococcus. The lesions reported here differ in no constant feature from those reported by Southard and Keene in 1905 for the pneumococcus.[2] The effects of the two organisms on tissues, so far as observable by the methods used, would place the organisms in one group.

We are under obligations to Professors Councilman and Mallory for direction of the work, to the various members of the City Hospital and the Danvers Insane Hospital staffs, named below, for the clinical sketches, to Dr. E. E. Tyzzer for his private case, and in particular to Drs. C. W. Duval and P. A. Lewis for supplying us with cultures in the course of their pneumococcus work in 1904-5.[3]

CASE 1.—G. K., male, aged 35, was admitted to Dr. J. Orne Green's aural service at the Boston City Hospital, March 31, 1900.

Clinical History.—Patient had had four attacks of chills and fever in past two years. Two weeks before admission there had been headache, malaise, severe pain in both ears, followed by bloody discharge two days later, and by a chill two days later. Pain in vertex of skull a little to right of median line, restlessness, insomnia, vomiting. Night before entrance, rigor for five minutes, followed by sweating, temperature 104. Both tympana were found perforated and remains of drum swollen. Tongue was coated and tremulous. Temperature rose to 103 and 105 and remained high during the day following. Leucocytes 16,000, April 5. Mastoid exploration: *Streptococcus pyogenes.* Improvement in headache, temperature 103. April 8, temperature 105.5, leucocytes 8,000. April 10, delirium, dilatation of pupils, vomiting, hiccough. April 11, muttering delirium, almost constant hiccough, fixed and dilated pupils, fibrillary tremor of neck and arm muscles, retraction and rigidity of neck. Death, April 12. Arms rigid four hours before death.

Autopsy Findings.—The autopsy, performed 10 hours after death by Dr. Fulton, gave the following head findings, with abstract of trunk findings: Calvarium normal. Sinuses normal. Dura slightly more tense than normal. Subdural space dry. Convolutions flattened. Scattered over the cortex are a few small yellowish opaque areas (2 to 3 mm. in diameter) set, as a rule, along blood vessels of the sulci. The material in these areas is tough and tenacious. The largest area (about 1 cm. in diameter) is on the mesial surface of the left frontal lobe. Yellowish-white fibrinopurulent exudate covers optic chiasm, optic tracts near chiasm, the cranial nerves, the under surface of pons and medulla, the superior vermis of the cerebellum. The exudate does not communicate with the auditory meatus. The ventricles contain from 30 to 50 c.c. of cloudy gray fluid and a small amount of pus in each posterior cornu. Choroid plexus is swollen and grayish. There is pus in lateral recesses of fourth ventricle. Mastoid operation in right ear. Left middle ear contains a slight amount of serous fluid.

Anatomic Diagnosis.—Acute leptomeningitis, encephalitis, and ependymitis. Mastoid operation (right side). Acute splenic tumor. Decubitus of right buttock. Echinococcus cyst of liver. Slight endaortitis. Chronic fibrous pleuritis.

Microscopic Findings.—Cultures from cortex, optic nerve, ventricles and lung gave *Streptococcus pyogenes.* Cultures from heart, spleen and liver were sterile, from kidney negative.

The cortex shows a deep meningeal exudate in which the phagocytic cells far outnumber the other types. The distribution of cells is irregular, since in a few foci about veins there are dense groups of lymphocytes. In a very few places there are fields with polynuclear leucocytes predominating. Vascular lesions are not prominent. The cortical tissue shows little evidence of lesion other than a swelling of the neuroglia cell bodies of the subpial layer. There is no evidence of multiplication of these cells.

The acute inflammation of the lining of the ventricle is shown by a diffuse infiltration with polynuclear leucocytes and an almost universal diffuse swelling of neuroglia cell bodies. The ependyma appears in places as a double or triple row of irregularly arranged cells. Among the ependymal cells is an occasional leucocyte.

The choroid plexus shows an exudate both within and between the folds. Connective tissue cells about the vessels within the folds are swollen. In places there is a dissection of the epithelial cells away from central fibrous tissue by means of polynuclear leucocytes. The vacuoles of the epithelial cells are often perfectly demonstrated, even in folds packed with leucocytes. Of the cells outside the epithelium, the majority are polynuclear leucocytes, mixed with desquamated epithelial cells and a limited number of cells of the phagocytic series. There are few cells of the lymphocyte series.

The cord shows a meningeal exudate in which polynuclear leucocytes are still numerous, but are outnumbered both by phagocytic cells and by cells of the lymphocyte series. In some places the lymphocytes exceeded the phagocytic cells in number. Cells of the plasma cell type stand out prominently, especially when they contain two or three nuclei. The phagocytic cells contain both fat and exudative cells. Of the included cells, lymphocytes and plasma cells are the most prominent; but polynuclear cells are also seen; and it was not rare to find cells of all three kinds engulfed in a single phagocyte. Some of the plasma cells escape inclusion and undergo a spongy vacuolation of the cell-body, which remains basophilic very late, together with a swelling of nucleus and clumping of chromatin.

At the points of deepest exudate the vessels have undergone extensive local lesions. All three coats of the arteries may be involved; the adventitia shares in the general meningeal exudate, emigrating leucocytes may be found sometimes in the muscularis, and the intima is often lifted by exudate cells. There are more polynuclear cells and deposits of fibrin about the arterial lesions than elsewhere. In the walls of the veins polynuclear cells and particularly plasma cells are prominent.

CASE 2.—J. D., male, aged 49, was admitted to Dr. J. Orne Green's aural service at the Boston City Hospital, May 30, 1900.

Clinical History.—Patient had had pneumonia at 30. There had been severe headache and a discharge from right ear for three weeks. On admission ear showed slight infiltration of

---

*From the pathologic laboratories of the Boston City and the Danvers Insane Hospitals.

* Read in the Section on Pathology and Physiology of the American Medical Association, at the Fifty-seventh Annual Session, June, 1906.

1. Southard, E. E., and Keene, C. W.: "A Study of Acute Hemorrhagic Encephalitis (*Staphylococcus pyogenes aureus*)," Am. Jour. Med. Sci., March, 1905.

2. Southard, E. E., and Keene, C. W.: "A Study of Brain Infections with the Pneumococcus," THE JOURNAL, vol. xlvi, Jan. 6, 1906, p. 13.

3. Duval, C. W., and Lewis, P. A.: "Studies on the Pneumococcus," Jour. Exper. Med., vol. vii, No. 5, August, 1905.

membrana tympani and looked convalescent. There was drowsiness and severe headache. Heart was enlarged to left. Arteriosclerosis. May 31, pain also in back and hips, increasing stupor, followed by unconsciousness at noon. Retention. Bloody urine drawn by catheter. Death, June 1, in coma with slight rigidity of extremities and moderate dilatation of pupils.

Autopsy Findings.—The autopsy, performed 54 hours after death by Dr. H. C. Low, gave the following head findings, including an abstract of the trunk findings:

Dura is only slightly adherent to calvarium. Vessels of dura are considerably injected. There is no sign of thrombus in any of the sinuses and no edema. Vessels of pia are considerably injected. There are few slight subpial hemorrhages over vertex. Near vertex, more especially near the posterior part, there is a fair amount of purulent secretion, and over the top of the cerebellum, between the posterior parts of the hemispheres and over nearly the whole of the base of the brain, there is considerable thick purulent exudation. On the under side of the right temporal lobe is a small place nearly 1 cm. in area where the cortex and meninges are adherent to the base of the skull. At this point a little pus came from the brain tissue. On cross section through both hemispheres at this point there is exposed in the right temporal lobe an abscess cavity about 3 x 3 x 4 cm. This is filled with thick yellow pus. About this for an area of from 1 to 2 cm. the brain tissue is soft and reddish and numerous dark red points fill nearly the whole of the rest of this lobe. No other abscesses are found in the brain tissue. In the ventricles there is a fair amount of thick purulent secretion which covers the choroid plexus.

Both middle ears are normal. The point where the brain and meninges are adherent to the skull is near the center of the right middle fossa just anterior to the eminence of the semicircular canals, and on chiseling away the bone from here, pus is found to be in some of the bone spaces. Just posterior to this, but a little more to the side, for nearly over the entire end of the external canal there is a slight amount of pus in the bone spaces. Mastoid cells have been scraped out in operation. Mastoid cells anterior to field of operation do not appear to be subject to any suppurative process.

Anatomic Diagnoses.—Acute leptomeningitis and ependymitis. Abscess of right temporal lobe. Suppurative osteitis of petrous portion of right temporal bone. Mastoid operation. Acute hemorrhagic cystitis. Healed pulmonary tuberculosis with localized tuberculous pleuritis. Chronic fibrous pleuritis. Slight chronic interstitial nephritis. Hypertrophy and dilatation of heart. Slight area of fatty change in mitral valve.

Microscopic Findings.—Culture from lateral ventricle gave *Streptococcus pyogenes.* The brain abscess contained a variety of organisms. Cultures from heart's blood, spleen, liver and kidney were sterile.

The histologic changes in the cortex are chiefly related to the underlying abscess. The meningeal exudate is slight and composed of mononuclear cells, mixed with a few polynuclear leucocytes. The mononuclear cells, as a rule, approach the plasma cell type. Compressed plasma cells sometimes occur singly or in pairs in the walls of small vessels in the nerve-cell layers of the cortex. For the most part there is very little sign of exudate in the deeper layers. The cells about the smaller vessels near the abscess are swollen and increased in number. Cells in apposition with the vessel walls are occasionally seen in mitosis. The nerve cells have undergone a variety of changes which are chiefly the product of edema—swelling and vacuolation, shrinkage and chromophilia, extrusion of nucleolus. The satellite cells occur often in groups of eight or ten, about the small pyramidal nerve cells, which are themselves, as a rule, in some degree altered. The satellite cells fail to show well-defined cell bodies or any sign of inclusions. There seems to be evidence that nerve cells may occasionally disappear from the midst of satellite cell groups. No mitoses were observed among the satellite cells in this case. Near the abscess there are a few nuclear figures in large cells, some of which had numerous vacuoles in their cell bodies outside the spindles. It is doubtful whether these figures occur in endothelial or neuroglia cells. There is little evidence of cell cavity. In the areas of frank hemorrhage here and there is a phagocytic cell containing blood globules.

The lining of the ventricle is macerated. There is rarely any evidence of proliferation in the lining cells. In places the wall is supplanted by masses of fibrin containing exudative cells. The vessels of the underlying tissue are dilated, sometimes to an unusual degree, and the sheaths of the veins are filled with cells of the lymphocyte series, including many examples of the plasma cell. Mitotic figures are scattered at rare intervals through the edematous tissue underlying stripped portions of the ventricular lining. One skein form was found in a highly vacuolated cell which lay free in a collection of blood globules. Otherwise the tissue shows merely degeneration or necrosis. In some cases the small cells near the nerve cells share their chromophilia, but in other cases the small cells appear to stain densely at a stage when the nerve cells are still fairly well preserved. The tissue under the ventricle appears to have been more directly subject to injury than the tissues about the subcortical abscess, so that there is here more sign of degeneration than of the cell proliferation seen about the abscess.

Case 3.—R. R., male, aged 53, was admitted to the service of Dr. A. L. Mason at the Boston City Hospital, April 21, 1901.

Clinical History.—Patient had been in bed three weeks before admission; malaise, weakness, headache, dizziness. On admission cheeks were flushed, slight left internal strabismus, pupils small; otherwise all signs were negative. The day after admission temperature rose to 102, patient became restless and noisy and tremor of extremities set in. April 24, ascites, dribbling of urine, mild delirium, Cheyne-Stokes respiration. April 26, incontinence of feces, rigidity of neck. April 29, patient unconscious and quiet, respiration rapid and superficial. Death.

Autopsy.—The autopsy, performed by Dr. E. E. Southard twenty hours after death, showed:

Head: Calvarium and dura normal. Longitudinal sinus filled with dark fluid blood. Subdural space shows marked increase of fluid; probably 300 c.c. leaks away. Pial vessels injected, pia over sulci opaque and tense from contained fluid. There is considerable web-like, thinly-spread opaque connective tissue in basilar region, especially around optic chiasm and in Sylvian fossæ. Brain substance is very soft; corpus callosum like Neufchatel cheese. All tissues are moist. Puncta cruenta distinct on section of centrum semiovale. There is about a test-tubeful of clear fluid in each lateral ventricle.

Cord: Much clear fluid under tense dura. Cord tissue is firm and well shaped, but over all is a thin, glistening, opaque-white deposit, slightly more marked in lumbar region. Foramen of Magendie and accessory foramina are occluded by this overgrowth. Middle ears normal.

Anatomic Diagnoses.—Basilar and spinal organizing meningitis. Internal hydrocephalus. Increase of subdural fluid. Edema of brain. Fatty degeneration of heart muscle. Slight fatty degeneration of renal epithelium. Congestion of spleen, liver, kidney, pancreas, bladder mucosa. Chronic pharyngitis. Hypostatic pneumonia. Chronic adhesive pleuritis. Chronic perisplenitis. Chronic interstitial orchitis.

Microscopic Findings.—Cultures from heart's blood and lung showed *Streptococcus pyogenes* and many other organisms. The liver showed *B. coli.* The tissues at the base show considerable variety in exudate. The looser tissues contain fibrin and polynuclear leucocytes, which outnumber the other kinds of cell. The adventitiæ of the vessels contain numerous cells of the lymphocyte series.

Intimal lesions, although prominent in arteries of smaller caliber, spare the larger arteries. The intimæ of the smaller arteries are lifted or completely dissected off by an exudate composed chiefly of cells of the lymphocyte series, among which are examples of the typical plasma cell. Between the loosened intima and the elastic layer of the artery there may be deposited a dense, deeply-stained sheet of fibrin. In late stages of the lesion, when the intima has scaled off, the appearances simulate a fibrinous transformation of the intima. The smaller vessels are often wholly blocked by masses of fibrin and desquamated cells. The nerve tissue beneath the exudate is edematous and shows nerve cells in various stages of injury, retaining, as a rule, well-staining nuclei. Single leucocytes invade the pons tissue for several millimeters. There are a few narrow marginal areas of nerve tissue replaced by fibrin

and leucocytes. The cord shows an exudate of cells of the lymphocyte series and well-developed vascular lesions resembling those at the base of the brain.

CASE 4.—H. W., male, aged 31, was admitted to the service of Dr. Henry Jackson at the Boston City Hospital, July 30, 1903.

Clinical History.—There had been persistent emesis without gastric pain or distress, three weeks. Dizziness, frontal headache, blurring of vision, swelling of feet and ankles, slight cough with expectoration. Stopped work two days before admission. Urine contained albumin and casts. Diagnosis, chronic interstitial nephritis. Discharged four days after admission. Readmitted Sept. 10, 1903. Heart enlarged; soft systolic murmur at apex transmitted to axilla. Heart and kidney signs grew gradually worse. Mind not clear. Oct. 14, 1903, erysipelas set in; developed rapidly to sloughing of eyelids with severe chills. Death Oct. 15, 1903.

Autopsy Findings.—The autopsy, performed five hours after death by Drs. R. E. Lee and E. E. Southard, showed:

Head (Dr. E. E. Southard): Scalp is everywhere edematous, ranging from 2 to 3 cm. in thickness. Tissues over frontal eminence and orbits are brawny and hard to turn back. Calvarium of normal thickness, without diploë. Dura of normal tenseness and thickness. Moderate injection of middle meningeal system. Sinuses filled with fluid blood and cruor clot. Meshes of pia distended with cloudy (fibrinous) fluid, without cellular exudate. Arachnoidal villi moderately well developed. Substance moist. Ventricles showed no increase of fluid. Interbrain, midbrain and bulb normal. Vessels at base normal.

Middle Ears: Right normal. Left contains greenish fluid pus with streptococci. Ethmoid cells normal. Orbital tissues are infiltrated with greenish pus containing streptococci. Eyes removed from behind show fairly clear conjunctivæ, with impression of opacity behind, especially marked in left eye.

Anatomic Diagnoses. — Chronic diffuse nephritis. Hypertrophy of heart. Slight fatty myocarditis. Erysipelas of face. Acute purulent conjunctivitis. Edema of pia and of substance of brain. Acute otitis media (*streptococcus*). Purulent infiltration of orbits (*streptococcus*). Slight bronchopneumonia. Chronic obliterative pleuritis (left). Fatty liver. Edema of glottis. Hydrothorax.

Microscopic Findings.—The exudate into the pial tissues consists of slight edema with exudative cells almost invariably mononuclear, mainly lymphocytes. There is an occasional polynuclear leucocyte. The only signs which can be connected probably with the septicemia are in some of the small arteries. These show desquamation of endothelium, with dense fibrin deposits on the elastica. The elastica in these arteries, which are in certain cases entirely plugged by leucocytic thrombi, fail to contract in the usual wave form, but remain smooth and flat. There is no considerable neuroglia reaction in the subpial layer or elsewhere.

CASE 5.—J. B., male, aged 19, was admitted to Dr. G. A. Leland's service at the Boston City Hospital, Dec. 30, 1903.

Clinical History. — Patient had had measles as a child. There had been discharge from right ear for six years, with occasional attacks of pain and fever. External abscess once opened by family physician. Two weeks before admission a similar attack was followed by severe, continuous, generalized headache. Temperature 102 two days before entrance. Pain localized in occipital region, radiating to interscapular region. Neck rigid. Leucocytes, 24,000. Right mastoid operation (Dr. Leland). Temperature dropped to 100. Leucocytes, 16,000. Slight rotary nystagmus, more marked in right eye. January 1: Right facial paralysis. January 3: Pupils dilated, right more than left; fundus examination showed haze of both discs with congestion of lamina cribrosa and venous engorgement. Vomiting. Restlessness. Second operation by Dr. Leland; exploration of cerebellum. Apparent improvement. Vomited once. Pain in occiput allayed by morphia. Wound dressed under primary ether, January 5. Afterward delirious, crying with pain in head. Morphia. Delirium once more, followed by coma, morning of January 6; respirations 6 to 8; pulse not countable and intermittent. Death.

Autopsy Findings.—Examination, limited to the head, made by Dr. E. E. Southard 2¼ hours after death; showed scalp veins filled with fluid blood. Tissues adjacent to lips of wound gray and chocolate-brown, edematous and friable. The necrosis involves the mastoid insertions of the right sternomastoid, splenius capitis, and trachelomastoid muscles; head drawn forcibly to the left. Rigor absent. Tissues warm.

Calvarium thin, rarely reaching .5 cm. Right temporal bone removed intact by sawing shows thumb-sized cavity of the mastoid exenteration and perforations made for exploration of posterior fossa cerebri (cerebellum and temporosphenoidal lobe).

Dura of the usual thickness, lightly adherent opposite bregma, can not be picked up readily with forceps. Small perforations are found in outer portion of right posterior fossa cerebri. Localized on dura covering posterior surface of petrous portion of temporal bone, involving meatus internus and aqueductus vestibuli, is a layer, .2 to .4 cm. deep, of granulation tissue with thick fibrinous greenish-gray pus. Sinuses contain fluid blood. Tissues about right superior petrosal sinus soaked in pus.

Pia shows moderate injection, chiefly of the large veins of sulci, over vertex and sides. Meshes of pia under interbrain floor are filled with tenacious greenish pus which follows both Sylvian arteries for a few centimeters into fossæ Sylvii and follows anterior choroid arteries for some distance. Optic nerves are held in edematous purulent fibrous tissue; nerves look redder than usual on section. Slender processes of fibrin containing pus enclose anterior communicating and anterior cerebral arteries; leaves of pia in this region are somewhat firmly united. Pituitary not grossly involved. Pia over pons is distended with plastic layer of greenish pus. Considerable clear fluid is found between pia and dura. Pia over cerebellum contains no pus except immediately over abscesses, but the subdural space of the right posterior fossa contains considerable purulent fluid.

Ventricles: The posterior horns of both lateral ventricles, the anterior horn of right lateral ventricle and floor of third ventricle contain slight plastic deposits of greenish pus and fibrin, apparently settled out of a considerable surplus of turbid brownish fluid distending the cavities. The ependyma of the ventricles is swollen, deeply velvety and peels away in a clinging layer .1 to .2 cm. thick. Fourth ventricle is lined with what resembles an early pyogenic membrane, which can be peeled away readily, leaving an edematous ependyma with deep red punctation.

Substance: Sulci of hemispheres are almost effaced. Substance is moist. Very little injection either of cortical or of central ganglionic vascular systems. The substance of the right cerebellar hemisphere external to flocculus contains a greenish abscess cavity 2 x 2 cm. across, of an indefinite depth. The edema and a slightly greenish color invade the dentate nucleus playing out vaguely. Injected tracks of director (used for exploration) are found in cerebellum and temporosphenoidal lobe. The abscess is just missed by the exploration. Interbrain, midbrain, and isthmus are normal on section. Weight (minus considerable fluid) 1490 gm.

Anatomic Diagnoses.—Mastoid operation. Exploration of cerebellum and temporosphenoidal lobe. Chronic otitis media. Abscess of cerebellum. Acute fibrinopurulent basal leptomeningitis. Pyocephalus internus. Edema of substance with flattening of gyri.

Microscopic Findings.—Culture from brain showed streptococci.

The cortical meninges at the vertex show a thin layer of large mononuclear cells of the phagocytic type. One of these occasionally contains a polynuclear leucocyte.

At the base the exudate is often 3 to 4 mm. thick and varies according to its relation with vessels. The free exudate shows numerous cells of the phagocytic series, together with polynuclear leucocytes and cells of the lymphocyte series in about equal numbers. The adventitiæ of the veins contain chiefly cells of the lymphocyte series. The tissue at the base is the only region examined in this case which shows marked lymphocyte infiltration.

The cerebellum shows an exudate which is deepest in the sulci between the outermost laminæ and beneath the superficial

pia mater. There is focal invasion of the molecular layer by leucocytes, either singly or in very small groups; but, beyond there, there is no evidence of either gross or selective injury to the nerve tissue. The exudate shows polynuclear leucocytes very prominently; but counting shows that they rarely exceeded the mononuclear exudative cells in number. Of these mononuclear cells the most prominent are large cells with eccentric vesicular nuclei, which are phagocytic for polynuclear leucocytes. About a few small veins are collections of cells of the lymphocyte series; for these cells the larger mononuclear cells fail to be phagocytic, save in rare instances.

The choroid plexus shows numerous cystic spaces about the larger vessels. The spaces contain granular material and numerous corpora amylacea. The acute inflammatory reaction fails to involve the central regions of the plexus, but is strikingly shown immediately below the ependyma in many folds. The deepest exudate occurs at the tips of certain folds, where the polynuclear leucocytes sometimes accumulate in masses and dissect off the epithelium. Numerous folds are wholly spared from exudate. It is not possible to give a reason for the variations shown. As a rule the epithelium is well preserved and shows many of its characteristic vacuoles. An occasional leucocyte is caught in emigration between the epithelial cells. Cells of the lymphocyte series are almost never in evidence. Between the folds there is considerable granular material with polynuclear and desquamated ependymal cells.

The floor of the fourth ventricle fails to show the pyogenic membrane suggested in the gross. The gross appearance was produced by an extensive local acute infiltration and formation of fibrin which permitted stripping off the superficial gray matter in a single mass. The fibrin collects particularly in the walls of small vessels, many of which are no longer pervious. The most prominent cells in the subependymal tissue are polynuclear leucocytes, some of which approach closely or seem to bury themselves in dying nerve cells. The neuroglia reaction does not go beyond swelling and process formation in the cell bodies.

At the edge of the abscess the intima of the arteries is raised by polynuclear leucocytes and may be stripped away. The large vessels remain pervious; it is probable that the smaller vessels become blocked at their origins. The abscess contains considerable fibrin. The polynuclear leucocytes far outnumber the mononuclear cells which are chiefly of the type with vesicular nuclei. The mononuclear cells in the free exudate are not very often phagocytic. The optic nerve shows edema and exudate of polynuclear leucocytes, together with a few phagocytic cells, in both the subarachnoid and subdural spaces.

CASE 6.—C. W., a male, aged 52, was admitted to the service of Dr. J. L. Ames at the Boston City Hospital, Jan. 21, 1904.

Clinical History.—Gonorrhea at twenty-seven. Rheumatism for ten years. Heavy drinker. Little alcohol for four days. The day before entrance fell while riding on car platform, procured one drink of whisky, lost consciousness and was brought to hospital. On admission dull, tremulous. Showed systolic murmur at apex transmitted to axilla and systolic whiff in arteries. Arteriosclerosis. Reflexes normal. Delirium with motor excitement set in but was replaced later with prostration. Slight nystagmus and deviation of eyes to right; pupils equal, reacting to light. Pulse rose to 160, respiration to 60, temperature to 105. Some spasticity of arms and legs. Râles appeared over both chests. Death, Sept. 26, 1904.

Autopsy Findings.—The autopsy, performed four hours after death by Drs. R. L. Thompson and N. H. Gifford showed:

Head: Hair black and fairly thick. Scalp normal. Calvarium thin. Dura adherent to calvarium. Sinuses contain cruor clot. Arachnoidal villi are fairly well marked. Meshes of pia contain over 50 c.c. cloudy, greenish-yellow, fairly thin fluid. Greenish and yellowish-white, fine and coarse thread-like markings along pial sulci. Both small and large vessels are moderately congested. Vessels of circle of Willis show slight diffuse thickening. Convolutions are well rounded and of fairly soft consistence with slightly congested vessels. Ventricles contain a few c.c. clear and pale yellow fluid. Cysts (1 to 3 mm. in diameter) stud choroid plexuses of both lateral ventricles. Pons and medulla of reduced consistence. Substance on section shows nothing remarkable.

Spinal cord: Fluid turbid. Pia thick and greenish-yellow. Cord soft.

Anatomic Diagnoses.—Acute leptomeningitis and encephalitis. Acute bronchitis. Edema and congestion of lungs. Chronic mitral endocarditis. General arteriosclerosis. Chronic splenitis. Chronic fibrous pleuritis. Chronic fibrous pericarditis. Chronic external pachymeningitis. Apical scar of left lung. Cysts of choroid plexus.

Microscopic Findings.—Cultures from heart's blood, lung and brain showed pure *Streptococcus pyogenes;* from liver, spleen and kidney, *Streptococcus pyogenes* and *B. coli.*

The cortical meninges are edematous and contain an exudate of polynuclear leucocytes which enclose numerous pairs of streptococci. Numerous chains of streptococci lie free in the granular material deposited in the pial meshes. Large phagocytic cells are rare. Single polynuclear leucocytes are found at rare intervals imbedded in the intima of the arteries; mononuclear cells are still rarer in this locus.

The severest lesion in this case affects the large sulcal veins, whose walls may be distended with polynuclear leucocytes outnumbering the original cells making up the wall. In the neighborhood of the injured veins there is an accumulation of large mononuclear cells; but these fail to be phagocytic in many cases, either for polynuclear leucocytes or for bacteria. Next to the severely injured veins, the larger arteries also exhibit the deepest infiltration of the intima with polynuclear leucocytes. The spinal meninges show an early exudate with few large phagocytes. Vascular lesions were not prominent in the blocks examined.

CASE 7.—L. H., a girl baby, born Dec. 25, 1904.

Clinical History.—Breast fed, had a cold at five weeks, but rapidly got well of it. The mother had sore throat, pain in back and legs, and fever when her child was about seven weeks old; the child at this time showed nothing but slight distension of the abdomen. A temperature of 104 appeared Feb. 23, 1905, throat and chest were negative. Admitted to Massachusetts Infants' Asylum with pulse 136, temperature 103, weight 5,000 gm. There was a slight red area on the left leg, attributed by the mother to a burn. The next day this red area had spread; the knee swelled; the head was held retracted. February 25, the whole left leg was swollen and tender but without increase of temperature, respiration shallow and grunting. The body temperature was maintained above 101. The leg improved; the morning of February 28, jaundice and convulsions appeared; general twitching, legs flexed, arms flexed across chest. The throat became filled with mucus. The chest showed râles, probably transmitted. March 1 the jaundice had increased, the head was held retracted, there was an occasional general twitching. The child vomited and failed to take food well. The eyes were fixed, the pupils dilated and sluggish. Death at midnight.

Autopsy Findings.—Examination 12 hours after death by Dr. E. E. Tyzzer showed: Murky limpid fluid beneath dura. Pial meshes contain murky bile-stained exudate. Exudate thick over cerebellum, thinner over cord. Murky bile-stained fluid exudate in ventricles.

Anatomic Diagnoses.—Acute cerebrospinal meningitis (*Stereptococcus*). Septicemia. Icterus (gall bladder and ducts normal).

Microscopic Findings.—Cultures showed *Streptococcus pyogenes* pure in heart's blood and liver, mixed with a *Staphylococcus* in spleen.

Cortex Cerebri: The meshes of the pia mater are distended with cells, of which the large mononuclear cells greatly outnumber the rest. The large mononuclear cells are phagocytic for numerous pairs and chains of streptococci. The inclusion of other exudative cells is frequent, but by no means so prominent as the bacterial phagocytosis. Large phagocytes of an omnivorous character are found, with vacuoles containing fat, mononuclear cells, polynuclear leucocytes and bacteria. Polynuclear leucocytes are frequent, but tend to show signs of degeneration. Cells which can be identified as belonging to the

lymphocyte series are not frequent. A few cells of the plasma cell type, occasionally with two nuclei, lie in the adventitiæ of the vessels.

Cerebellum: The exudate varies in character, but shows everywhere a certain number of polynuclear leucocytes. Colonies and chains of streptococci abound in the superficial pia mater, and as a rule are enclosed within cells, both within polynuclear leucocytes and within large phagocytic cells. The bacteria seem to pass through an eosin staining stage before complete digestion. Except in the deepest places of the exudate opposite the mouths of the sulci, the polynuclear leucocytes are outnumbered by the large phagocytic cells. It is not infrequent to find cells phagocytic for polynuclear leucocytes which are themselves phagocytic for bacteria. In the sulci the connective tissues are packed with large vacuolated cells which accommodate themselves readily to changes of shape in the spaces they occupy. There are a few cells of the lymphocytic series, often with vesicular nuclei or with chromatin not murally arranged; but cells of the finished plasma cell type are rare.

Spinal Cord: The large phagocytes containing several kinds of cells and bacteria are prominent in the looser tissues. The adventitiæ of the vessels contain also a moderate number of cells of the lymphocyte series. The arteries show intima occasionally lifted by edema, with rarely an exudative cell beneath.

CASE 8.—C. H., a hydrocephalic imbecile, aged 45, entered Dr. H. W. Mitchell's service at the Danvers Insane Hospital Oct. 13, 1905, and died Jan. 24, 1906.

Clinical History.—Dull at school. "Always ailing." Never could earn his living. Became vagrant several weeks before admission. Impairment of memory. Romberg sign absent. Gait fairly steady. Coarse tremor of fingers. Left pupil slightly irregular and without reaction. Knee jerks lively. Achilles reflexes brisk, with slight clonus. Plantars present. Spurious clonus of both ankles. Arm reflexes lively. Movements slow and listless. No spontaneous conversation. Memory poor. Limitation in range of thought. Lack of ideation. Fainting spell two weeks before death. Decubitus. Pneumonic area in right lung. Death.

Autopsy.—Autopsy, performed by Dr. E. E. Southard, showed:

Head: Hair is gray and thin. Scalp strips readily. Calvarium thin, without diploë. Dura not adherent to calvarium. Dura distended. Sinuses contain liquid blood. Arachnoidal villi in moderate amount. Dura strips readily from pia except over ascending frontal gyri, where, particularly on the left side, the dura and pia are gummed together by a plastic stringy yellowish-gray exudate, covering an area on each side scarcely larger than a dollar and thinning out gradually at edges. There is no gross connection between this exudate and the otitis media of the right side. Except at the vertex, the pia mater is without exudate or edema and shows a few fibrous streaks over sulcal veins. The substance of the brain, cerebellum, interbrain, pons and bulb, exclusive of fluid contained in the ventricles, weighs 960 gm. The fluid withdrawn from the ventricles measures 1,300 c.c. The sulcation of the brain is rich but chiefly superficial and gives the impression of an alligator skin bag. The pia strips readily from the substance. Many of the sulci run inward for a few millimeters and bend at right angles, assuming a position concentric with the hemisphere surface for a few millimeters. It is not possible to homologize the sulci found with the sulci of the normal brain. The Sylvian fossa is the sole landmark on the flank of the hemisphere. Incision of the ventricles and withdrawal of the contained clear liquid show basal structures of a normal appearance, but almost total absence of callosal and fornix tissue. The walls of the ventricles are thinnest above and thickest below and behind. At the vertex the cortex and underlying white matter measure in places no more than 1.5 cm. The walls of the ventricles are of smooth and normal appearance. The cerebellum is of normal appearance and consistence. Lower structures are grossly normal. Right middle ear contains semi-liquid yellowish-green pus communicating with a cavity 1.5 cm. in diameter, in the mastoid process.

Anatomic Diagnoses.—Purulent otitis media dextra. Localized purulent leptomeningitis (vertex). Congenital internal hydrocephalus, with atrophy of corpus callosum and fornix and with microgyria and thinning of cortical substance. Absence of diploë. Slight aortic sclerosis. Apical scar of left lung. Edema and congestion of posterior parts of lungs. Cholelithiasis.

Microscopic Findings.—Culture from left middle ear shows *Streptococcus pyogenes.*

Cortex Cerebri: Phosphotungstic hematein section shows diffuse loose meshed neuroglia tissue with delicate isolated fibrils running in all directions. In the cell layers of the cortex the fibrils are curly, but run, as a rule, radially. Just below the pia, they begin to run tangentially and unite in a thin, dense mat. The deposit is thickest at the bottom of the sulcus, and there are sometimes projections of glia into the pial tissues in this situation, recalling the picture of *Randsklerose.* Some of the cells of the subpial region show two or three centrosome-like bodies in a light space in the cell body. The gliosis is remarkably even and delicate and is not markedly perivascular.

Cortex with Exudate (Frontal Region): Hemorrhage, with numerous polynuclear leucocytes and mononuclear cells in about equal proportions. Many of the mononuclear cells are phagocytic for polynuclear leucocytes.

The neuroglia cells beneath the pia have swollen bodies; some have two or three nuclei.

Cortex from Various Regions of Right Hemisphere (Nissl Stain): Superior frontal, ascending frontal, ascending parietal, paracentral, calcarine, limbic, gyrus rectus, show unusual cell pictures characterized by an unusual relative cell richness suggesting the pictures presented by the cortex of lower animals. The richest cell picture is derived from the calcarine area. Right Ammon's Horn (eosin methylene blue, phosphotungstic acid hematein) shows a thin superficial fibrillary gliosis with delicate even fibrils, and centrally a regular rich felt work of even delicate fibrils with some stouter ones.

Choroid Plexus: Numerous concentrically-layered bodies, Villi few. Vacuoles few.

Caudate Nucleus: Nerve cells as wide apart as usual. The ventricle wall shows flattened cells having basal corpuscles (phosphotungstic acid hematein) but, as a rule, no cilia. There are no elevations like those in more acute internal hydrocephalus.

Cerebellum: Centrum album gyrorum apt to be slender.

Cord: Nissl sections show an occasional eccentric nucleus in anterior horn cells at several levels. Phosphotungstic acid hematein demonstrates no excess of neuroglia.

The striking point exhibited by this case is the reaction of the neuroglia to the acute leptomeningitis. This reaction is a cellular gliosis resembling in every detail the cellular gliosis of the normal adult brain. Although the case showed very slight resistance to the streptococcus infection of the middle ear, yet the cells of the meninges showed phagocytic tendencies resembling those of the normal adult meninges, and, so far as demonstrable, the polynuclear leucocytic exudate was in the process of clearing up by the mononuclear cells.

CASE 9.—J. O., a woman, aged 40, entered Dr. F. R. Sims' service at the Danvers Insane Hospital April 4, and died April 9, 1906.

Clinical History.—Headache, violence, delusions of persecution, incoherence, four days before entrance. Nursing child thirteen months old. Herpes of lips, skin lesions probably due to chafing, constant listlessness. Lay on right side with head retracted and drawn to left and eyes turned up and to the left. Gait tottering, with feet held wide apart. General tremor. Knee-jerks apparent. Babinski reflex doubtful. Limbs held rigid. Pupils widely dilated. Resistive, distractable, disoriented. Fever 103. Signs of pneumonia in right lung set in three days after admission. Death.

Autopsy.—Autopsy, performed by Dr. E. E. Southard, showed:

Head: Hair dark. Scalp normal. Calvarium thick, with abundant diploë. Two emissary vein foramina in parietal bones. Dura lightly adherent to calvarium in bregmatic region. Dura tense, not markedly injected. Sinuses contain liquid or freshly clotted blood. Superficial cerebral veins deeply injected. Dura and pia inter-adherent in region of arachnoidal villi, through yellowish, very fibrinous pus. Fine

superficial injection of vessels everywhere, but very little congestion of veins except at vertex. Pia externally smooth and only slightly moister than usual. The sulci and gyral surfaces are in a few regions filled with yellowish fibrinous pus: the upper two-thirds of both fissures of Rolando, the upper thirds of both ascending parietal gyri and, to a less extent, the upper thirds of both ascending frontal gyri, both superior parietal lobules, both fossæ of Sylvius. The circle of Willis is wholly concealed by fibrinous pus. The cisternæ of the base are filled with cloudy liquid. The middle two-thirds of the basilar artery is covered with fibrinous pus. The loci of origin of the fifth nerves are marked by masses of pus. The pia over culmen monticuli is swollen to a depth of .5 cm. with pus. The great horizontal fissure of cerebellum contains stringy yellowish pus.

Brain weight, 1,310 gm. Gyri a trifle flatter than normal. Substance everywhere equally reduced in consistence. The olives are no harder on palpation than the remainder of the medulla. Cerebellum softer relatively than cerebrum, softest in vermis which in places is almost diffluent. The line of Gennari in the cerebrum is hard to make out. There is no focal difference in consistence in the cerebrum, even in the areas of most marked suppuration.

Ventricles contain a normal or only triflingly increased amount of fluid which is cloudy. At the tip of each posterior cornu is a small mass of fibrinous pus. There is no pus in third or fourth ventricles.

Cord: On incision of the lumbar dura, considerable cloudy liquid flows out under slightly increased tension. Dura everywhere pinker than usual. Pia everywhere cloudy, but puffed out with yellowish fibrinous pus in cervical, middle thoracic, and lumbar regions notably behind. The root ganglia are frequently swollen.

Middle ears both free from pus. Cribriform plate apparently normal. Sphenoidal sinus filled with fibrinous pus. Nasal mucosa of right side swollen, injected, on left side apparently normal. Pituitary body soft, shows traces of pus on upper surface. Optic nerves, third nerves Gasserian ganglia (notably beneath), to a less extent seventh and eighth nerves, are surrounded by pus as they leave cerebral dura. Left retina excised; shows no injection.

Anatomic Diagnoses.—Acute cerebrospinal leptomeningitis. Serofibrinous exudate of vertex, Sylvian fossa, interpeduncular space, pons, vermis and horizontal fissure of cerebellum, pia of cord, origins of cranial and spinal nerves, Gasserian and spinal root ganglia. Acute purulent internal hydrocephalus and seropurulent exudate in cisternæ. General edema of brain and cord, particularly of vermis of cerebellum. Empyema of sphenoidal sinus. Edema of lungs. Bronchopneumonia of both lower lobes. Herpes labialis. Numerous minute hemorrhagic lesions of back and thighs. Acute splenitis. Acute and chronic nephritis. Slight aortic and mitral sclerosis. Extra cusp to pulmonary valve. Chronic adhesive pleuritis (bilateral).

Microscopic Findings.—Smear from sphenoidal sinus shows tremendous numbers of organisms, probably all streptococci. Smear from vertex shows great numbers of polynuclear leucocytes and mononuclear cells but no organisms. Smear from purulent fluid of basal cisternæ shows a very few pairs of small diplococci within leucocytes. The results of blood serum cultures confirmed the findings by smear.

Examination of the tissue in this case, showed a remarkable variety of pictures. Leptomeningitis, although fatal, was in the process of clearing up. This clearing-up was taking place from above downward. The pus at the vertex, about the longitudinal sinus and in pial meshes was sterile. The dominant cells were mononuclear. They contained numerous polynuclear leucocytes and fragments of nuclear material, besides considerable fat. No organisms could be found in these tissues. The picture thus resembled that in a healing leptomeningitis of meningococcal origin.

The pus at the base, on the contrary, contained a few pairs or short chains of an organism, which proved to be *Streptococcus pyogenes* in culture. The meshes of the pia at the base showed a higher proportion of polynuclear leucocytes than the pus at the vertex. Mononuclear phagocytosis was in process; but the healing must be regarded as in a far earlier phase than that of the vertex.

Traversing the bone at the base of the brain and examining the mucosæ of the sinus, a picture of acute inflammation is found. The polynuclear leucocytes here far outnumber the mononuclear cells and the tissues are filled with countless chains of streptococci. The general picture in this case anatomically resembles that in a meningococcus case of meningitis. The clearing up of the exudate takes place irregularly and from above downward.

GENERAL CLINICAL SUMMARY.

Seven patients were male, two female. Seven patients were over 30 years old; two of these over 50. One was nineteen, one an infant. Five cases showed otitis media.

	DURATION OF ACUTE SYMPTOMS.	DURATION OF CEREBRAL SYMPTOMS.
Case 1	4 weeks	24 days
Case 2	24 days	3 days
Case 3	4 weeks	4 weeks (8 days?)
Case 4	13 weeks	Brief
Case 5	Chronic middle ear (6 years), 24 days	24 days
Case 6	7 days	7 days
Case 7	7 days	7 days
Case 8	2 weeks	2 weeks
Case 9	10 days	10 days

As will be seen by comparison with the durations in a series of pneumococcus cases reported by Southard and Keene,[2] the durations in these streptococcus cases run a trifle greater than in the pneumococcus cases.

GENERAL ANATOMIC SUMMARY.

The brain lesions vary in character and distribution. The leptomeninges showed lesions in all cases. Cases 4 and 3 were exceptional. Case 4 showed distension of the pial meshes with a flocculent liquid exudate (which might readily simulate the so-called meningitis serosa). On the other hand, Case 3 showed an opaque tense pia mater of the vertex, with a thin web of organizing tissue at the base (simulating the appearance of a late meningococcal infection). The other seven cases all showed a more cellular exudate, variously described as thick, tenacious or fibrinous, and as opaque yellowish or greenish in color.

The distribution of the pial exudate is interesting. Except the hydrocephalic (Case 8), the base showed exudate in all cases, if we include the serous case (Case 4); if we include Case 4 as an exudative case, in all cases except Case 3 (organizing) and Case 5 (fulminant operative case). The cord is involved from the base, as a rule, the ventricles from the base or from abscesses of the substance adjacent to the ventricles.

The lesions of the brain substance are various. Flattening of the gyri stands in close relation with involvement and probably with actual distension of the ventricles. When flattening is absent, the substance is soft and moist and may be finely injected. No case of cortical flattening fails to show exudate in the ventricles; but in early stages of ventricular exudation the sulci may flare normally. Frank abscesses occurred in Case 2 (right temporal lobe) and Case 5 (right cerebellar hemisphere).

Cases 1, 2, 4, 5, 8 showed otitis media. Of these Cases 1, 2, 5 came to mastoid operation. Case 4 was an erysipelas case. The nasal sinuses were affected in Case 9. Of the others Cases 3, 6, 8, 9 showed lung lesions, which can not be certainly brought into relation with the leptomeningitis. Case 7 showed septicemia with icterus. Decubitus of one buttock occurred in Case 1, in multiple areas in Case 8, hemorrhagic cystitis in Case 2.

Of chronic lesions, whose relation to the infection

can not be asserted, the following occurred: arteriosclerosis in Cases 1, 4, 9; chronic pleuritis in Cases 1, 2, 3, 4, 6; chronic internal hydrocephalus in Case 8.

GENERAL SUMMARY OF MICROSCOPIC FINDINGS.

As in previous work with cases of *Staphylococcus pyogenes aureus* and of pneumococcus brain infections, alterations were found in several of the tissues. The lesions of the streptococcus series present a close resemblance to those of the pneumococcus series. Characteristic for both organisms are the lesions of the vessels. The vascular lesions (described in more detail in the paper on pneumococcus infections) may serve to distinguish the pneumococcus-streptococcus cases, as Dr. Councilman has suggested, from meningococcus cases, It would be less easy to distinguish these vascular lesions from those in tuberculous leptomeningitis, in which the occurrence of local necrotic areas might need to be considered in making a diagnosis from the tissues. With a sufficiently long series of cases, it might be possible to mark out, from the vascular lesions alone, the course of the disease leptomeningitis.

Not merely the vessel lesions, but also the meningeal exudates serve in their variety to show how complex is the question of the natural history of leptomeningitis. As indicated in the two former papers,[1, 2] the occurrence of exudates with numerous mononuclear cells of the lymphocyte series is in itself not sufficient to differentiate any one type of leptomeningitis, such as the tuberculous, the syphilitic, the general paretic. Plasma cells are ubiquitous. The meninges exhibit exudates of a very variable character in many infections and toxic conditions. Perhaps it is not immediately necessary to ascribe the variations of exudate to different qualities of pathogenic agent. It will be desirable to work out first the time relations of a few organisms.

GENERAL SUMMARY AND REMARKS.

The foregoing cases of streptococcus brain infection are of interest in comparison with the cases of pneumococcus brain infection described last year. The main results may be stated in connection with those of the pneumococcus study.

As with the pneumococcus series, the questions of main interest are brought up by the varying extent and effect of lesions like (1) arteritis and phlebitis, (2) the cellular infiltration of the meninges with its variation in respect to phagocytosis and (3) the attendant cellular and, in certain cases, fibrillar gliosis.

Clinically viewed, the cases are of various duration and run a trifle longer than the pneumococcus cases. The relation of streptococcus meningitis to lung lesions is less suspicious than that of staphylococcus or pneumococcus brain infections to lung lesions. The part played by lung lesions in bringing about meningitis has probably been overestimated. The streptococcus cases seem to be more pronouncedly "cerebral" or "meningitic" from the very start of acute symptoms than are the pneumococcus and staphylococcus cases, which are a little more "primary."

Anatomically viewed, the streptococcus cases preserve their resemblance to the pneumococcus cases, even to the production in some cases of small abscesses. Particular attention may be called to the case simulating meningitis serosa (Case 4). It would be well to review the cases of this disease to be found in the literature and exclude those without bacteriologic examination.

Considered histologically, the streptococcus cases again resemble the pneumococcus cases. The same relations of bacteria to leucocytes, of leucocytes to cells of the macrophage type are shown in the two series. The intimal infiltration of the arteries and the intimal proliferation and exudative lesions of the veins run parallel in the two cases. The occurrence of early fibrillar gliosis (in the sense of the production of new fibrils by the swollen neuroglia cells) is important. The interpretation of early fibrillar gliosis is not easy, since it is necessary to exclude extraneous causes (old age, arteriosclerosis, chronic active lesions) for its occurrence.

An extensive series of guinea-pig inoculations, which need not be reported in detail, confirmed the main result, viz.: the parallelism in action of the two organisms, pneumococcus and streptococcus. Orbital inoculations simultaneously in numerous animals with histologic examination of animals killed on successive days were employed as in previous work. The inoculations of the strains used, as a rule, produced no clinical sign, despite the suppuration present. As in the human cases, each of the lesions found is apparently wholly curable taken by itself.

The reversible character (to use a phrase from books of logic) of the phenomena is shown in the strikingly various pictures presented by the exudate in Case 9 taken from the vertex downward.

Indeed, it is rare to find in streptococcal, as in other forms of acute leptomeningitis, any single lesion which is necessarily incurable. It is probable that in many cases the patients die of toxemia. This toxemia may vary with the extent of the exudate. The amount of exudate which we see at an autopsy may mislead us in our idea of the proportions of the toxemia, since wide reaches of the pia mater may be sterile, though other parts contain multiplying organisms. Differential studies of the exudate in several places are essential if we are to get a fair sample of the conditions. Such studies might readily assume clinical importance.

The early glioses found in several cases are of some importance both in general and clinically. These glioses will be best considered in connection with those in tuberculous meningitis in a subsequent paper.

THE EARLY DIAGNOSIS OF ABDOMINAL HEMORRHAGE.*

H. S. HOLLENBECK, A.B., M.D.
CHICAGO.

The need of a means of detecting abdominal hemorrhage promptly, surely and safely has long been felt, and the inadequacy of present methods is so generally recognized that no discussion of that phase of the subject is necessary at this time.

Serious abdominal injuries are comparatively common, and it is well known that a large percentage of them are fatal. In those cases of abdominal injury in which severe hemorrhage results the majority of the patients die within an hour, while in other cases, in which the injury may have been just as severe, the hemorrhage may be insignificant and yet sepsis may follow. The signs of sepsis do not appear at once, but are delayed, so that by the time a positive diagnosis can be made in the majority of cases operation is useless.

*Read in the Section on Pathology and Physiology of the American Medical Association, at the Fifty-seventh Annual Session, June, 1906.

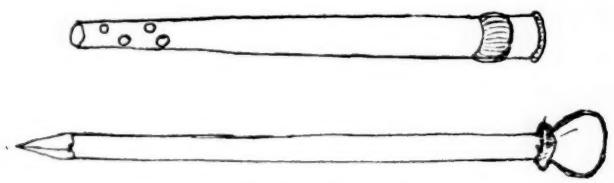
* From the Department of Physiology, Northwestern University Medical School.

To complicate the problem of diagnosis, the majority of cases of abdominal injury are found to be without definite external sign, thus rendering obscure the nature and severity of the injury, while the ordinary signs of hemorrhage are manifestly unreliable in the presence of shock, which is the usual condition presented in cases of severe abdominal injury.

In every such case the possibility of sepsis must be recognized and preparations should be made for its proper treatment. The most favorable time for the removal of septic material is immediately after it is introduced. Unfortunately, the symptoms which render possible a diagnosis and insure the necessity of operative procedure do not appear for some time after the injury, during which time the germs are rapidly multiplying and increasing in virulence.

Confronted by these conditions, and recognizing that the life of his patient depends on his early diagnosis of sepsis, the surgeon has felt himself forced to the expediency of an exploratory laparotomy as the only positive means of an immediate and accurate diagnosis available to him.

This method of solving the problem is clearly open to serious objections, for, in the first place, it is unscientific to take so serious a step as a laparotomy until all other available means of diagnosis have been exhausted. In the second place it is sometimes impossible to obtain the consent of the patient or his friends for an immediate operation. In the third place it would add



much to the condition of shock of the patient, who might already be in a critical condition, and the procedure might serve only to prove that no operation was necessary, as has happened repeatedly in the past.

It is the purpose of this paper to show that there is an aid to diagnosis which has heretofore been overlooked and which may in any case be used to determine whether or not the injury has caused abdominal hemorrhage.

DESCRIPTION OF INSTRUMENT.

The instrument used consists of a trocar about three inches long, the cannula having a lumen of one-sixteenth of an inch in diameter and a needle which just fits into the cannula, but is longer, so that the point projects (Fig. 1). One end of the cannula is thin, but not pointed, while the needle has a triangular point which projects from the end of the trocar at one end and a handle which can be held firmly between the thumb and finger at the other end. One end of the cannula is fitted for the attachment of an aspirator or a hypodermic syringe. Near the opposite end are several holes in the side of the tube about the diameter of the lumen of the tube and far enough apart to avoid weakening of the trocar (Fig. 2).

With the needle in place, the instrument can be inserted into the abdominal wall and by careful manipulation forced through it and the parietal peritoneum. The needle can then be withdrawn and the aspirator attached. The side holes insure an opening for the entrance of fluid, should the one at the end be occluded by pressing against the wall of the intestine.

The instrument may be kept sterile and ready for emergency use by being placed in a tube filled with alcohol and properly sealed. The alcohol may be used for preparing the field of operation and thus avoid any delay.

EXPERIMENTS.

EXP. 1.—Anesthetized dog. The instrument was carefully inserted into the abdominal wall until it seemed that the parietal peritoneum had been pierced, leaving the point free in the peritoneal cavity. The abdomen was then opened by a median incision near the point of insertion of the trocar and careful inspection showed that the trocar had penetrated to the peritoneal cavity without perceptible injury to the peritoneal covering of the intestine. Several more punctures were then made and in no case was the intestine punctured or injured. A series of similar punctures were tried successively on five other dogs, all of which verified the results obtained above.

EXP. 2.—A series of observations were made to determine the manner of entrance of the trocar. One edge of an abdominal incision being turned back, a puncture was made so that the trocar came through at a point where the intestine touched the wall; as the point came through the parietal peritoneum the intestinal wall was pushed before it without apparent injury, owing to the resistance of the wall and its free mobility. This result was verified without exception in a series of experiments on other dogs. These experiments seem to show conclusively that with careful manipulation there is practically no danger of puncturing the intestine. If there is uncertainty as to whether or not the trocar is through the wall, a test can be made by partially withdrawing the needle, if the point is in the peritoneal cavity it will be relatively freely movable, and if it is not through, it will be more fixed.

EXP. 3.—Having satisfied myself as to the practicability of passing the trocar into the peritoneal cavity I proceeded to the problem of detecting hemorrhage. Another dog was anesthetized and by means of a small incision hemorrhage from the spleen was produced. Three minutes later a puncture was made four inches away, a glass syringe attached to the trocar and blood drawn off. Punctures were made at other points on the same side and in each case blood was obtained. In another dog hemorrhage from the liver was produced and four minutes later blood was obtained from several points on both sides. These results were verified by a series of tests made at a later time. So long as the blood remained in a liquid state it could always be detected, but here another problem suggested itself, for the blood may clot within a very short time after the injury.

EXP. 4.—Anesthetized dog. Trocar inserted and 1 ounce of water injected, then some of it was withdrawn with syringe. It was perfectly clear. This was repeated, using various amounts of water, showing that normally there is no discoloration of the water. Hemorrhage from the liver was produced which ceased in two minutes. In thirty minutes the blood had all clotted as shown by an incision.

The trocar was inserted four inches from the border of liver and 40 c.c. of water injected. A syringe-full was then withdrawn and it was dinstinctly blood-tinged. Repeated experiments showed that clotted blood in the peritoneal cavity may be detected invariably by the discoloration of the water.

The evidence seems conclusive and demonstrates the ability to detect at once blood in the peritoneal cavity, whether fresh or clotted.

In a large per cent. of all abdominal injuries there is hemorrhage; therefore the value of the above method is apparent at once, since by it the diagnosis of hemorrhage can be made absolute in less than three minutes after the patient is seen.

The usefulness of the instrument would not be limited to the detection of hemorrhage, but could be demonstrated in case of rupture of the bladder, for in that case there would be an abnormal amount of fluid in the peritoneal cavity and it could be tested for urea. Furthermore, in cases of rupture of the bowel a fecal odor would be obtained from the fluid injected and withdrawn. The instrument might also be applicable to

hemorrhage in case of the rupture of the uterus, for this is sometimes suspected long before it can be demonstrated.

It is not intended that this instrument shall replace the other methods of diagnosis, but that it should be combined with them. The history of the case should be taken with great care as to the precise manner of the injury and the exact nature of the object causing it, and these points duly considered with reference to their probable results, as it might indicate the point at which the puncture should be made.

SUMMARY.

1. Present means of diagnosis of abdominal hemorrhage are inadequate.
2. An accurate diagnosis can not be made soon enough without an exploratory laparotomy.
3. Exploratory laparotomy involves unnecessary risk.
4. Experiments show that (a) an exploratory puncture is practicable; (b) it would diagnose hemorrhage.
5. Exploratory puncture is a simple and safe procedure.
6. It renders possible a prompt and accurate diagnosis of abdominal hemorrhage.

DISCUSSION.

DR. S. J. MELTZER, New York City, said that a trocar with a side opening was employed by him for experimental and practical purposes more than twenty years ago. It is a purely practical question. Abdominal hemorrhage can be well diagnosed without puncture by a trocar. The sudden onset of severe pain in the abdomen, symptoms of shock and collapse, an area of dullness and a history of trauma are sufficient for the diagnosis. If the blood is hidden, the trocar might not reach it, or trocar might get into the lumen of some part of the gut instead of into the thin layers of blood between the coils of the viscera. The possibility of infection has also to be taken into consideration. The prevailing view in medicine and surgery is rather against the employment of a probatory puncture under such circumstances.

EXPERIMENTS ON VENOUS BLOOD PRESSURE AND ITS RELATIONS TO ARTERIAL PRESSURE IN MAN.*

HENRY SEWALL, PH.D., M.D.
DENVER.

The use of artificial schemata for teaching the mechanical principles of the circulation is properly considered one of the most valuable of our laboratory methods.

As arterial pressure—the driving force of the blood—is a function of three variables, the output of the pump, vascular elasticity and peripheral resistance, when these factors are known, the calculation of the blood velocity and blood pressure in any part of the vascular circuit would appear to be a matter of gratifying simplicity. But when we study the hemodynamics of the living animal, especially when in clinical work the vascular apparatus departs more or less from normal, deductions made from principles established by the use of artificial machines will lead us far astray from the truth. The error involved is not in the teachings of the schema as a schema, but in our poor logic in trying to measure the workings of a very complex living machine by those of a very simple artificial one.

Bayliss and Starling[1] have done the good service of demonstrating on animals departures from such a course of circulation events as might have been predicted by a mere student of mechanics. They show, for example, that injection of salines into the circulation of a living animal raises the venous pressure proportionately more than the arterial; that capillary blood pressure depends more on venous than on arterial pressure; that a fall of arterial pressure does not necessarily involve a fall in capillary pressure.

A recent clinical case of mine illustrates the point of view which is here emphasized. A woman, about 63 years of age, whose heart, lung and kidneys are essentially sound, has, during the past ten years, frequently broken down with attacks marked by subjective misery, by constipation, by great diminution in the volume of urine passed and occasionally by the expectoration of pure blood. While she seemed to be approaching such a crisis her arterial blood pressure was found very high—about 170 mm. Hg. Her venous pressure was moderately high. Administration of nitroglycerin for a few days was followed by a lowering of arterial pressure and an even more marked lowering of venous pressure, and the patient felt much better.

The explanation made of the clinical history is as follows: The root of the disorder lies in the high arterial blood pressure. The left ventricle gradually fails, particularly when harrassed as the result of worry and mental and physical overstrain on the part of the patient, and the residual blood at the end of systole gradually so accumulates as to engorge by back pressure the pulmonary circuit; hence the occasional hemoptysis. The elevation of venous pressure and passive congestion leading to the accumulation of gouty metabolites and diminished urinary secretion are but links of the same chain. Dilatation of the peripheral vessels by means of nitroglycerin drains into these capacious channels the excess of blood and relieves stagnation in the heart and veins.

The phenomena of the venous circulation can not be deduced from a knowledge of arterial blood pressure, since this contributes but a single factor out of several which determine venous blood flow. Venous blood pressure, like the arterial force, is determined by the ratio of input to resistance offered to output.

Broadly speaking, the input and the venous pressure vary directly with mean arterial blood pressure and inversely with contraction of the arterioles. The output varies inversely and the venous pressure directly with the resistance to flow. This factor is made up of the resistance, positive or negative, offered to the entrance of blood into the right auricle, to which must be added the influence of the intrinsic contraction of the veins, their compression by variable external forces, as muscular pressure and mechanical stretching, and especially by the influence of gravity.

It is becoming more and more obvious that the facts of the circulation demand a functional division of the venous system in which the splanchnic area forms one group of vessels and the external veins another. The latter are subject to every influence of environment, capable of a rapid normal variation between the extremes of dilatation and complete emptiness; the former are relatively shut off from external stimuli and have a capacity which, uncontrolled by vasomotor regulation, would accommodate all the blood in the body. Physiologists have appreciated the importance in the circulation of this potential splanchnic abyss ever since the

* Read in the Section on Pathology and Physiology of the American Medical Association, at the Fifty-seventh Annual Session, June, 1906.

1. Bayliss and Starling: "Observations on Venous Pressures and Their Relations to Capillary Pressures," Jour. Physiol., 1894, vol. xvi, p. 159.

discovery by Ludwig and Cyon,[2] forty years ago, of the function of the depressor nerve. This nerve, it will be recalled, is a delicate twig having an independent course in a limited group of mammals and passing out of the vagus and superior laryngeal nerves to end in the heart. The nerve is purely afferent in function; stimulation of the central end of the divided nerve causes a steady lowering of arterial blood pressure to the extent of from 30 to 50 per cent., which is dependent on reflex inhibition of tone in the splanchnic arterioles.

Clinicians do not seem to have been impressed with the pathologic importance of the splanchnic vascular apparatus until Leonard Hill[3] demonstrated the extraordinary effects of gravity on its circulation, particularly in subjects weakened by toxic agents. The work of Oliver[4] and others has emphasized the functional supremacy of splanchnic circulation, and Abrams[5] has recently devoted a monograph to the cause and treatment of splanchnic neurasthenia.

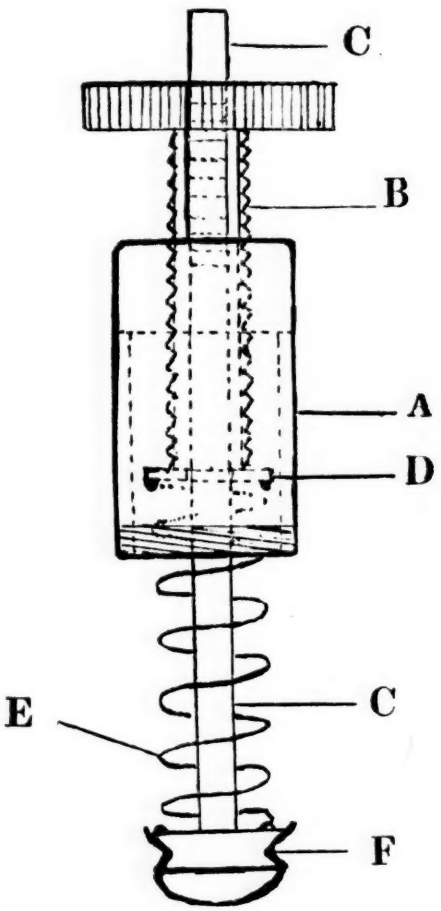


Figure 1.

Briefly stated, the relation of the so-called splanchnic reservoir to the general circulation is as follows: In the normal individual, peripheral resistance to the blood flow in the various districts of the body is so co-ordinated that mean arterial blood pressure shall vary within but narrow limits. If the vasomotor mechanism controlling the splanchnic area is enfeebled the circulation therein is correspondingly released from physiologic control and is subject to gravitation. In the erect position, therefore, a man's blood tends to settle in the abdominal vessels, but, while lying supine, the force of gravity no longer impedes the return of the blood to the heart. It is obvious that the fate of the general circulation depends in a peculiar way on the irritability and power of the splanchnic vasomotors. This mechanism must compensate by increased activity for every excess of intravascular pressure locally brought to bear on it; but, on the other hand, abnormal elevation of general arterial blood pressure is prevented through the depressor nerve whose normal stimulus probably consists in the mechanical strain of the contracting ventricles and which is to inhibit the vasomotor centers for the splanchnic area.

That the apprehension of these principles has not been general is to be suspected from the discordant results that comes out of the researches of those who have investigated the postural variation of the arterial blood pressure in the human subject.

It will not be disputed that, to maintain the mean arterial tension, outflow of vasomotor nerve energy must be greater, to compensate the drag of gravity, in a man in the erect position than when recumbent. If there is overcompensation for the force of gravity, the arterial blood pressure in the upright position may be expected proportionately to exceed that found when recumbent. While if the more or less pathologic condition of undercompensation prevails, it is easy to understand how the general arterial blood pressure may be higher when measured in the recumbent than in the upright position. That it is the abdominal vascular system especially and not that of the lower limbs which acts as a blood reservoir was ingeniously demonstrated by Oliver,[4] who, under certain conditions, caused a marked elevation of the arterial pressure in the recumbent position by compressing the abdomen with a considerable weight (28 pounds). Essentially the same results have been obtained in another way by Erlanger and Hooker[6] in their admirable researches on blood pressure in man. As a matter of fact, my own observations bearing on this point seem to show that in vigorous subjects systolic arterial pressure is slightly higher in the upright than in the supine position, while in the majority of those who are "neurasthenic," particularly in those with flaccid abdominal walls, the results are very much reversed.

A clinical fact of considerable interest finds an interesting explanation when considered in the light of the foregoing discussion. Now and then it is found in people with organically sound hearts that the radial pulse on one or both sides completely disappears when the arms are extended above the head. I have found it so especially in subjects of passive pulmonary tuberculosis and neurasthenia. But the occurrence is so frequent in cases exhibiting well-compensated valvular disease of the heart that its cause deserves special investigation. I have noted the pulse failure in mild grades of uncomplicated mitral insufficiency, mitral stenosis and aortic insufficiency. Occasionally the phenomenon is so marked that the elevation of the arm to the horizontal, the forearm being bent at a right angle, causes pulse failure. The cause can not lie in abnormally low arterial pressure, for I have found the pulse to fail in two individuals in whom the systolic pressures averaged 140 and 160 mm. Hg, respectively. The pulse never fails with the arms held vertically while the subject lies su-

2. Ludwig and Cyon: Arb. aus d. phys. Anstallzn. Leipsic, 1866, p. 128.
3. Hill: "Influence of the Force of Gravity on the Circulation of the Blood," Jour. Physiol., 1895, vol. xviii, p. 15.
4. Oliver: "Blood and Blood Pressure," London, 1901.
5. Abrams: "The Blues (Splanchnic Neurasthenia)," 1904.
6. Erlanger and Hooker: "An Experimental Study of Blood Pressure and of Pulse Pressure in Man," Johns Hopkins Hosp. Rep., vol. xii, 1904.

pine, but when he is sitting or standing. Slight mental excitement or physical exertion may faintly restore the pulse which has disappeared. The explanation of these facts seems to be contained in results which I, assisted by D. W. Steiner,[7] elicited more than twenty years ago in a study of the physiology of the depressor nerve. When the arm is elevated the circulation can be maintained through its arteries only through some compensation which implies increased output of heart or increased vascular tone. When blood drains out of the elevated arm it must be accommodated by a dilatation of the vascular circuit, unless there is a rise of arterial pressure, for which I can find no evidence. In mitral lesions, at all events, there can be no reason to suppose the excess of blood is accommodated in the heart itself.

A consideration of the publication last referred to[7] renders very plausible the suspicion that even the small excess of resistance offered to the arterial circulation by elevation of an arm is felt by the heart and that this organ, through the depressor nerve, whose existence in the human economy can not be doubted, complains of the increase of strain, from which it is immediately relieved by a reflex depression of the vasomotor center. It is entirely open to conjecture that in valvular heart disease there is developed a heightened irritability of the depressor nerve mechanism and that part of the benefit which clinical observation shows to accrue from prolonged rest following acute conditions of cardiac disease depends on ample time being given for the modification of depressor nerve lability.

A fortiori, it may be suspected that in a loss of this irritability lies the explanation of many of those mysterious ruptures of compensation with which the clinician has to deal. The theory just suggested attempts to explain only pulse failure in persons having strong, though physically imperfect, hearts and vigorous vasomotor mechanisms. When the pulse fails in the elevated hands of those who are constitutionally weak, though with normal heart valves, it seems more reasonable to presume that the enfeebled vasomotor system, instead of normally reacting to the stimulus of diminished pressure in the brain and increased pressure in the arterioles, allows the latter to dilate to escape the strain.

According to the views already enunciated, the two groups of cases may be easily distinguished by the manner in which the arterial blood pressure reacts to change in the position of the body. In the normal vascular system the hydrostatic strain on the splanchnic vessels incident to the erect position is fully compensated by their increased tonicity, so that when the recumbent position is assumed the rate of blood flow into the right auricle is not materially changed. Whereas in the weak vascular system the blood column, in the upright position, settles in the splanchnic veins to such a degree as to lower arterial pressure; then when the recumbent position is assumed gravity no longer impedes the passage to the heart of this retarded stream and arterial pressure is raised by the excess of blood added to the circulation.

The following are a few extracts from actual clinical observation on two groups of patients, in both of which there was failure of one or both radial pulses when the arms were elevated. The arterial pressures were taken with the Stanton instrument, having a cuff three inches broad and measuring only systolic or maximal pressures. It will be noted that in the individuals with valvular lesions the systolic pressures were above normal and offer no explanation of the pulse failure.

1. INDIVIDUALS WITH VALVULAR DISEASE BUT PRESUMABLY STRONG VASOMOTOR SYSTEMS.

CASE 1.—Mr. R., aged 54, has slight degree of mitral insufficiency, and slight but palpable arteriosclerosis. The left radial pulse disappears when arms are held up and back. Arterial pressure, sitting, is 161 mm. Hg., recumbent, 154 mm. Hg.

CASE 2—Mr. J., aged 21, has slight degree of mitral insufficiency. As the arms are elevated first the left and then the right pulse disappears. Arterial pressure, sitting, is 142 mm. (The pressure, when recumbent, was somewhat lower, but the record has been lost).

CASE 3.—Miss Z., aged 23, has a slight degree of mitral stenosis. On elevating the arms, first the left, then the right, radial pulse disappears. Arterial pressure, sitting, is 138 mm., recumbent, 129 mm.

All the above were vigorous looking persons.

2. INDIVIDUALS WITHOUT VALVULAR DISEASE BUT WITH EVIDENCES OF VASCULAR WEAKNESS.

CASE 1.—Miss S., aged 23, rather an athletic girl with a normal heart but decidedly neurasthenic. Right radial pulse disappears when arms are elevated. Arterial pressure, sitting, is 100 mm., recumbent, 122 mm.

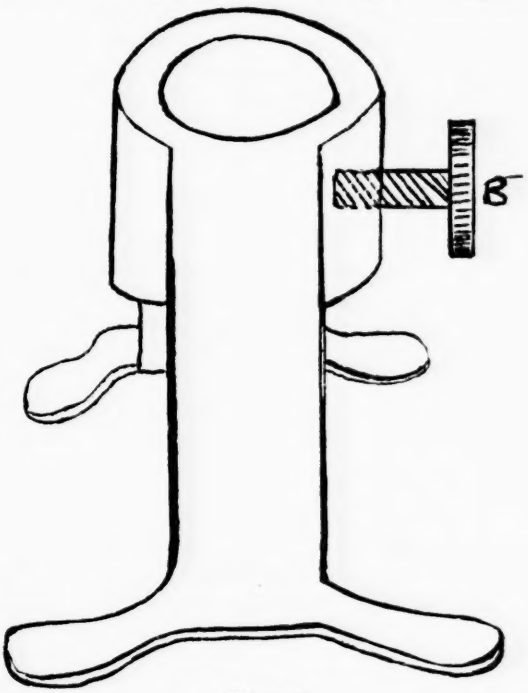


Figure 2.

CASE 2.—Miss H., aged 27, is a neurasthenic. Pulse is weakened and occasionally disappears when arms are elevated. Arterial pressure, sitting, is 113 mm., recumbent, 125 mm.

CASE 3.—Mr. G., aged about 63, has a weak, intermittent heart, suspected of slight myocarditis. He is a somewhat active man of affairs. The abdomen is flaccid, pulse and heart beat weak and left radial pulse disappears when arms are elevated. Arterial pressure, sitting, is 119 mm., recumbent, 137 mm.

INSTRUMENTAL METHOD OF MEASURING VENOUS BLOOD PRESSURE.

When a vein, as of the hand, is obliterated by the pressure of a finger and the blood is wiped out of the vessel in the direction of the heart as far as the first valve, the vein segment remains empty until the finger pressure is relieved. Obviously, if the occluding finger could be replaced by a recording instrument capable of exerting variable pressures on the vein the blood pressure within the latter could be determined with precision. The in-

7. Sewall and Steiner: "Study of Action of the Depressor Nerve and a Consideration of the Effect of Blood Pressure on the Heart Regarded as a Sensory Organ," Jour. Physiol., 1885, vol. vi, p. 162.

strument to be described was constructed with this object and has been called a *spring blood pressure gauge*. Not until after my instrument was made and the greater part of my observations were completed was my attention attracted to the monumental work of Oliver[4] and to his description of a very similar apparatus demonstrated by him in 1898.[8]

The spring pressure gauge is represented in section in Figure 1, magnified two diameters. A brass cylinder, A, one-half inch in diameter and seven-eighths long, is plugged at one end to the depth of one-fourth inch to afford a broad bearing to the screw B, which passes through it and which is long enough to have a movement of about three-fourths of an inch. The screw is bored through the center for the passage of the aluminum piston rod C. The lower end of the screw B is swivelled to a small disk of metal, D, three-eighths inch in diameter, which, of course, moves to and fro with the motion of the screw, but is prevented from revolving by two projections from its periphery, which move in slots let into the inner surface of the cylinder A. From the outer margin of the under surface of the disk, D, project four small eyelets which serve to support a spiral spring, B, made of fine steel wire. The other end of the spiral, which, when without tension, is nearly one inch long, runs through similar eyelets in the upper surface of the ebonite pressure button, F. The length of the spring and hence the zero point of the scale, can be adjusted by screwing it into or out of the eyelets. The aluminum rod, C, is screwed into the pressure button, F, and passes up through the hollow screw, B. Whenever the disk, D, and the pressure button, F, are approximated, the tension of the spring varies proportionately, and the piston rod, C, projects above the screw, B. The screw has twenty threads to the inch, and a half inch of the upper portion of the piston rod, which is flattened for the purpose, is ruled in ten divisions. When the spring is not in tension the upper mark of the rod scale is level with the top of the screw head. The instrument is calibrated by the aid of a mercurial manometer.*

It has been found that pressures obtained by the application of an unyielding disk to vessels of various size and depth in the tissues vary widely, though the vascular tension may really be the same.[9] Much more accurate results are obtained by interposing an elastic cushion, containing air or water, between the pressure button and the vessel. In the instrument this purpose is accomplished by tying over the pressure button the tip of a small rubber finger cot, leaving a small air chamber at the bottom of the button. Unlike Dr. Oliver, I find that with the small pressure values which frequently have to be measured in the veins, the error of tissue resistance is a factor of considerable importance, even with the use of the elastic pressure pad. In my observations, therefore, I have always sought to apply the pressure over a point on the vein having a firm foundation.

In using the instrument on another person it is held freely in the hand, the pad is pressed down on a vein, which is then wiped empty, and the pressure is relaxed until the blood begins to flow under the pad, the piston is then pressed against the side of its bed with a finger, the instrument is lifted and the pressure read off. In making observations on one's self the instrument is supported in a stand or pedestal whose feet are curved to embrace the vein (Fig. 2). Pressure may then be accurately varied by turning the screw, B.

*The instrument can be obtained from J. T. Hoyt, mechanic to the physiological laboratory, College of Physicians and Surgeons, New York, or from Messrs. Flint and Lomax, Denver.

8. Oliver: Jour. Physiol., vol. xxi, p. ii; and vol. xxiii, p. v; also "A Few Jottings in Physiologic Medicine," Jour. Balneol. and Climat., October, 1903.

9. Sahli: "Diagnostic Methods"; also Oliver's "Blood and Blood Pressure."

It is worth noting that when the vein is occluded by the minimal force necessary to cause its collapse blood will gradually ooze past the obstruction and, collecting against the closed valve ahead, will slowly fill the vein peripherally, and when the tide has reached the pressure button this will be lifted suddenly by the filled vein. When the vein has been occluded as described it is very probable, as suggested by Erlanger and Hooker, in explanation of certain results of their own, that its inner walls stick together by a certain force of cohesion. But there is probably left at each end of the vein-slit a capillary pore through which the blood percolates; and as the vein central to the area of pressure gradually fills the contact adhesion is suddenly overcome.

EFFECT OF GRAVITY ON VENOUS BLOOD PRESSURE.

The fundamental part played by gravity as a resistance factor in the venous circulation has already been noted. According to Oliver,[4] the pressure of a column of blood increases at the rate of about 1.9 mm. Hg. for every vertical inch. It hardly needs mention that, in measuring venous pressure, allowance must always be made for the relative positions of vein and heart on a vertical scale. I have followed Gaertner[10] in assuming that the point of mean venous pressure in the right auricle lies behind the angle formed by the top of the fifth left cartilage with the sternum. Most of my measurements were made with the hand vein from three to four inches below this point. My records of venous blood pressure were all, when necessary, corrected to this level; therefore, in them the element of gravity is eliminated.

The following observation shows how a small excess of blood thrown into the right auricle may be supposed to alter the general venous blood pressure: With the left arm resting on a table, the pressure gauge was applied to a vein of the left hand with just sufficient force to keep it occluded for a period of over one minute. Then the right arm was actively extended above the head; the blood pressure was so increased that the resistance of the gauge was overcome in three seconds. The increase of venous pressure in the left hand thus caused by elevation of the right arm can not be reasonably ascribed to increased flow through the capillaries, but must be due rather to an elevation of pressure in the superior vena cava and presumably in the right auricle, which perceptibly impedes the entrance of blood from the system at large. This is a very important conclusion which will be reverted to in the section on the effect of digestion.

It should be noted that these observations were carried out on a man of 50 with a structurally sound but slightly weak and sometimes irregular "tobacco heart." While sitting quietly at a table elevation of the legs on a chair caused no decided increase of venous pressure in the hand, the excess of blood flowing from the legs being accommodated, no doubt, in the abdominal vessels. Oliver[4] found, as might have been expected, that in the recumbent position the hand-vein pressure was markedly increased by raising the legs to the vertical. The clinically important question of the effect of bodily position on venous pressure was not especially considered.

EFFECT OF EXERCISE ON VENOUS BLOOD PRESSURE.

Oliver and others have noted the physiologic fact, of great importance for clinical purposes, that local muscular exercise markedly accelerates the circulation in the corresponding areas. This fact is strikingly illustrated in the following experiment: The venous pres-

10. Gaertner: Muench. med. Wochschr., 1903, No. 47; abstracted in Amer. Jour. Med. Sci., 1904, p. 907.

sure in the resting left hand of a man of 50 averaged 3.4 mm. Hg. This hand was then exercised by alternately clinching and relaxing it for half a minute. The veins appeared first to diminish in size and then rapidly filled. The pressure taken immediately after the exercise had risen to 5.3 mm. In a man of 27 the pressure, under similar conditions, rose from 3.8 to 5.4 mm. There can be no doubt that this increase of venous pressure and blood flow was due to increased input of blood following local arterial dilatation. The increase of pressure persisted for a considerable interval—a minute or more—after cessation of the exercise. When both hands were supported at the same level, exercise of one had no material effect on the venous pressure in the other. In the experiment in which the venous pressure in one hand was shown to be raised by elevation of the other above the head, the increase of pressure in the former was much more considerable when the muscles of the elevated arm were alternately contracted and relaxed.

Gentle exercise of the whole body, such as walking about the house, is followed by a more or less marked rise in the venous pressure of the hand according, apparently, to the state of the circulation at the beginning of the experiment; thus, 1, average pressure before exercise, 3.4 mm.; average pressure after exercise, 4.2 mm. 2, average pressure before exercise, 4.2 mm.; average pressure after exercise, 4.5 mm.

Violent and exhaustive exercise, such as rapid stooping of the body with general contraction of muscles, except those of the member in which blood pressure was taken, was followed in a vigorous young man by decided elevation of venous pressure in the unexercised hand; thus: Venous pressure in the right hand before exercise, 3.9 mm.; venous pressure in the right hand shortly after exercise, 5.3 mm.

These results illustrate the fact that, though, as found by other observers, arterial blood pressure may or may not rise as a result of exercise, according to its violence, venous blood pressure, and presumably pressure within the right auricle, always does so. This is evidence for the belief, supported in other directions, that the exercise dyspnea of patients with cardiac disease, and probably of healthy people in high altitudes, is largely a sign of right-heart strain.

EFFECT OF TEMPERATURE ON VENOUS PRESSURE AND VEIN CONTRACTION.

The relatively slight musculature of the veins has led to under-estimation of their contractile function. In comparing the veins with the arteries as contractile mechanisms it is only fair to consider the ratio of muscle mass in a given section of vein to the mean blood pressure it must react against, with the similar ratio in a corresponding artery. The subject of vein physiology seems to have received very limited attention. Bancroft[11] studied the veins in the hind limbs of cats and rabbits. No marked decrease in the caliber of the veins was produced by clamping the aorta, the vein becoming simply flattened and flabby. But stimulation of the sciatic nerve caused marked contraction which was irregularly localized. The effect of the stimulation was much influenced by the conditions of exposure of the vein and the vasomotor apparatus was very subject to fatigue. A study of the human veins demonstrates: 1. That the vein may be emptied either passively by failure of inflow or actively by its own contraction. 2. That in the relaxed and partially filled vein, at least when held horizontally, the blood may flow freely past a valve in either direction. 3. That the closure of a vein valve is usually, if not always, produced by active vein contraction, primarily of the vein segment peripheral to the valve and probably secondarily by that central to it. It seems reasonable to suppose that abnormal dilatation (varicosity) of veins depends on failure of vein contractility to make the valves sufficient. 4. Vein contraction can be sharply localized. 5. The normal master stimulus of venous contractility is cold, especially when associated with light friction. 6. The contractile manifestations of the veins vary greatly, probably from introduction of a fatigue element. 7. It is possible that innervation of the skeletal muscles is accompanied by contraction of the corresponding veins.

In the superficial veins and those of the lower limbs the musculature is said to be relatively well developed. "Flattened and circularly arranged muscle cells are met with at the inner surface of many of the larger valves."[12]

In persons in whose arms the superficial veins are prominent, the veins contract and the valves become more or less visible on exposure of the arm to cool air. If now the arm is slightly brushed from wrist to shoulder by a single pass of the other hand, the veins thus irritated may become completely invisible, or still appear as white cords, though their course is plotted by the valves, each of which is held shut by a droplet of blood kept in place by the contracted vein central to it. The contractile power of the vein may still keep the droplet of blood in place over the valve for a time when it is opposed by the influence of gravity through elevating the arm. When a vein is dilated, mechanical irritation of a limited segment sometimes causes a tonic local contraction of that part. When the blood is smartly brushed out of a full vein up to a given valve and then prevented from re-entering below, the emptied segment of vein seems to be actively contracted and sharply marked off from the full vein terminated by the closed valve beyond.

When the hand is soaked in cold water for a minute, the veins contract and become nearly or quite invisible. But at the same time the skin of the hand becomes very red. There is no accompanying change of arterial pressure in the arm. The congestion of the hand is evidently produced by capillary engorgement due to increased resistance offered to the flow of blood by the contracted veins. The venous pressure falls somewhat after this procedure, but is not nearly so low as when measured in a vein of the same degree of distension when the skin is pale. That is, in the first case the ratio of inflow to resistance in the veins is much greater than in the second. In other words, when a vein becomes smaller by active contraction of its walls the pressure within it tends to rise; when the diminution of its size depends on diminished arterial inflow the venous pressure always falls.

The localized contraction of veins is well illustrated after immersion of the hand and half the forearm in cold water. For minutes after the removal of the member the veins remain small or invisible over the area which had been chilled, while just above it the veins of the arm, fed from the deeper tissues, may be fully dilated; the result is especially striking if a slightly constricting band is laid round the upper arm.

As is familiar to all, soaking the hand in warm water

11. Bancroft: "The Venomotor Nerves of the Hind Limb," Amer. Jour. Physiol., 1898, vol. 1, p. 477.

12. Huber, Bohm, Davidoff: "Text-Book of Histology," 1900.

causes the skin to redden and the veins to dilate. Simultaneously the venous pressure is increased for a time, but the elevation of pressure seems to pass away while the veins still continue dilated. The results of such experiments depend largely on the state of the circulation at the beginning of the observation. It is worth noting that prolonged immersion in hot water exerts something like a paralyzing effect on the contractile mechanisms of the veins. The veins of the heated hand fail to contract under conditions of gravity, etc., to which those of the other hand adjust themselves.

Experiments on the veins elicit more decided results when performed on rising in the morning than after the fatigues of the day. It is obvious that venous pressures to be compared together must be measured under the same conditions of external temperature.

THE INFLUENCE OF RESPIRATORY MOVEMENTS ON VEIN VOLUME AND PRESSURE.

My attention was directed to this subject by the statement of Gaertner[10] that "negative pressure within the thorax produced an increase of pressure within the right auricle." I was astonished to find that the veins of the hand and forearm actually swelled in inspiration and diminished in expiration. The inspiratory swelling of the veins is accompanied by an increase of blood pressure within them. It is a familiar fact that when the arm is inclosed in a plethysmograph it tends to diminish in size during inspiration and increases during expiration. It is to be inferred, therefore, that any excess of blood in the veins during inspiration must be drawn directly from the arteries. The correctness of this deduction is easily demonstrated. Though the respiratory rise and fall of the veins is sometimes plainly obvious to the unaided eye, it may best be demonstrated when magnified by a lever formed of a strip of stiff paper about one-quarter of an inch wide and four inches long and gummed on one side. One end of the paper strip is stuck to the skin close to the vein across which it rests in close contact. Under favorable conditions such an arrangement demonstrates that the blood flow in the peripheral veins is far from being a steady stream. There is usually a more or less marked vibration of the lever synchronous with the arterial pulse, more obvious in one phase of respiration than another. Sometimes this cardiac pulsation of the lever is striking in its magnitude and is then, as will be shown later, evidence of dilatation of the arterioles.

With the beginning of inspiration the lever begins to rise, reaching its maximum height a little after the beginning of expiration. Although under exceptional conditions the lever movements are plain during ordinary respiration, it usually requires forced inspirations to bring them out. If, while the lever is showing marked respiratory oscillations, the brachial artery at the elbow is clamped by pressure of the thumb, the lever movements instantly cease. If the vein supporting the lever be clamped proximal to it the respiratory motions continue plain until the vein becomes so distended that it no longer responds to the increase of internal pressure. But when the vein is clamped distal to the lever, provided the hand is held in such a position that the next proximal valve is sufficient, the respiratory motion of the lever at once ceases. When the arm is bent at the elbow and the forearm is held horizontal it is easy to demonstrate in some individuals that, when the veins are relaxed and only partly filled, the current of blood may readily pass the valve in a peripheral direction. To accomplish this, one of the veins of the forearm is clamped several inches peripheral to a valve and partly emptied by raising the arm; with deep inspiration the blind end of the vein fills as if there were no valve at its junction with the larger trunk.

The inspiratory swelling of the veins can usually be demonstrated only under conditions in which the veins are relaxed, moderately full, and when the arterioles are presumably fairly dilated. In numerous instances I have found the inspiratory lever motion in persons whose hands have been reddened by immersion in warm water when the lever had shown no motion immediately before applied to the contracted vein of a cool, pale hand. The inspiratory wave is apt to be more obvious in the evening when the veins are relatively relaxed; and, according to the state of peripheral circulation, it is common to find the phenomenon to a decided degree on one day when, in the same person, it had been absent on a previous trial. As the respiratory movement of the veins is investigated progressively from the hand to the arm, the inspiratory swelling seems to fail before the elbow is reached, and sometimes it is possible to see even a partial collapse of the arm veins due to the aspirating force of a deep inspiration. The same respiratory motion is to be obtained, though with more difficulty, from the veins of the feet. In this case the advent of the wave seems delayed considerably after the beginning of inspiration. It is sometimes found that respiratory oscillations of blood pressure are plainly transmitted through the capillaries with but little cardiac pulsation and *vice versa*.

The following interesting results were obtained from an adult female patient lying in the coma of cerebrospinal meningitis. The hands were warm and the veins distended. The paper lever resting over a vein of the hand showed regular pulsations of considerable amplitude and synchronous with the radial pulse. There was an immediate fall of the lever with each intermission of the pulse. The lever swept down instead of up, and, therefore, the vein became smaller with each inspiration. In time the patient was seized with a series of general convulsions. Preceding by several seconds each convulsion, the cardiac motion of the lever diminished in amplitude, the lever gradually descended and the vein became visibly smaller. These facts were interpreted to mean that the tetanus of the voluntary muscles was preceded by general spasm of the arterioles. The phenomenon was of practical value as indicating the administration of chloroform in time to abort convulsions.

In order to determine how general might be the occurrence of this inspiratory venous wave, one hundred persons were investigated. All but one were adults, ranging from 17 to 75 years of age. Sixty were males and forty females. About half were noted as in good health, while those forming the other half represented a considerable variety of chronic disease. There was found to be a decided inspiratory swelling of the veins on the hand or lower forearm in 44 cases; a slight swelling in 16, making a total of 60. No respiratory movement could be seen in 25 cases. The movement of the lever was both up and down in different periods of the same inspiration in 4 cases and the vein diminished in size (shown by downward movement of lever) in inspiration in 11 cases.

Not to prolong this discussion needlessly, it may be said that, while there was failure of lever movement in about one-fourth of the healthy subjects, no downward inspiratory movement (showing uncompensated aspiration by the thorax) occurred except in persons suffering

from some disease of the circulatory apparatus, such as arteriosclerosis, uncompensated heart disease, or active pulmonary tuberculosis.

The thought at once suggests itself that the respiratory wave of venous pressure is but the propagated respiratory wave of the arterial blood current. From the physiologic point of view, the transmission of such pressure changes through the capillaries must have important relations to the nutrition of the body.

The still disputed question as to the origin of the respiratory waves of arterial blood pressure, whether due to variable output from the heart or to rhythmic vasomotor contraction, is not settled by this investigation; though the fact that the inspiratory swelling of the veins is much more pronounced with costal than with diaphragmatic breathing, and also the apparent delay in the appearance of the wave in the foot veins (though this point has not been very definitely studied) are both strong evidences in favor of the generally accepted belief that the respiratory wave of arterial blood pressure has a mechanical origin, and is due primarily to the relative excess of blood entering the heart by aspiration during the phase of inspiration. On the other hand, the near coincidence in time between the beginning of inspiration and the commencement of the inspiratory swelling of the veins makes it seem that some other factor must be involved. If it were permissible to assume a slight vasomotor inhibition beginning with inspiration all the phenomena would find an explanation. That the arterioles may dilate with inspiration was especially well illustrated in the person of a man, aged 40, who was recovering from a severe break in compensation due to aortic insufficiency. The paper lever applied to a hand vein showed well marked oscillations corresponding with both pulse and respiration. When the breathing was deepened the amplitude of the cardiac oscillations of the lever was increased, especially in the phase of inspiration.

EFFECT ON BLOOD PRESSURES OF PROCESSES FOLLOWING THE INGESTION OF FOOD.

It would be fruitless to discuss from an *a priori* standpoint the changes in arterial, venous and capillary blood pressures that might be expected to attend the digestive process. Dilatation of the splanchnic vessels and the loss of material from blood by secretion into the alimentary canal must, it may be supposed, be compensated by somatic constriction and by absorption of material from the intestines. But as the study of the blood pressure in different positions of the body has shown how insidiously physiologic merges into pathologic distribution of blood mass, still more, according to my observations, is weakness in the compensating mechanisms of blood distribution manifested during digestion. According to Oliver,[4] during the first stage of digestion lasting about half an hour, the splanchnic vessels dilate, the somatic arteries contract with elevation of arterial pressure, and the venous pressure falls. Also, "after the lapse of twenty or thirty minutes the splanchnic area rapidly diminishes, and in about an hour settles down again. . . . When the splanchnic area diminishes the systemic arteries and arterioles dilate, the mean arterial pressure falls, and the venous pressure rises."

Such a distribution of digestive events is little supported by actual observation of digestive processes in man and animals. My own observations on arterial pressure were unfortunately limited by the use of an instrument measuring only systolic pressures; nevertheless, in connection with the venous pressures, they have a certain value.

My observations on the changes of blood pressure accompanying digestive activity were made on 21 individuals, of whom seven were normal and fourteen, inmates of the Denver and Arapahoe County Hospital, suffered from various lesions of the heart and arteries. In the former class the venous pressures taken within half an hour of the termination of a meal rose in five and fell in two cases. The maximum arterial pressure usually increased slightly (2 to 10 mm. Hg.), but fell in three instances. In a robust but gouty man having abnormally high arterial and venous pressures, the former fell from 1 to 2 mm. fifteen minutes after a hearty lunch, but in two and a half hours rose from 3 to 5 mm., while the venous pressure rose very slightly at the first observation, but dropped to about one-half its first value at the second.

Two individuals on whom many observations were made at various hours on successive days illustrate the two classes of digestive reaction:

1. In the first, a female, aged 40, the effect of a meal is usually to cause the veins to become smaller and the venous pressure less; even if the veins maintain their size the pressure within them falls after meals. This fall of pressure may amount to 30 per cent. or more of the original. The lower pressure continues for about two or three hours and then the pressure gradually ascends, but may not have reached normal in four hours. The changes found in arterial pressure were believed to be within the errors of observation. A number of conditions, such as time of day, the amount of food taken, etc., may affect the relations of the pressure curve. Thus, on one occasion the usual evening dinner was anticipated by a noonday dinner, succeeded in some five hours by a light supper. After supper the usual fall in venous pressure was replaced by a rise. In the light of the discussion to follow, this rise may be looked on as a sign of cardiac fatigue.

2. In a man of 50, having a weak and irregular "tobacco heart," the digestive process was associated with the opposite effect on venous pressure. The pressure rose immediately after a meal and continued high for about three hours, when it gradually returned to the resting state. The former individual feels warmer in the morning than in the evening and her venous pressure is higher in the morning before breakfast than in the evening before dinner; with the latter subject these conditions are reversed. The former becomes cool or chilly after a full meal, the latter becomes warm and flushed. So far as my inquiries have led, in those who experience a sense of warmth on eating, the effect of a meal is to raise the venous blood pressure, while in those who feel cool or chilly the venous pressure falls. That these results have an important constitutional basis is suggested by the adage quoted by Dr. Oliver: "If you eat to be cold you will live to be old." The postprandial rise of venous pressure can be explained either as the result of increased inflow of blood through dilated arterioles or of diminished output from the veins caused by elevation of blood pressure within the right auricle.

On *a priori* grounds it would seem absurd to expect unwonted flushing of the somatic system when the energy of the body is employed with the digestive process. On the contrary, experimental evidence is distinctly in favor of the view that rise of venous blood pressure occurring as a result of digestion is due wholly to relative damming back of the blood in the surface veins, follow-

ing the elevation of pressure in the right auricle which probably accompanies the excessive inrush of blood from the abdominal viscera.

The rise of venous pressure during digestion, therefore, would appear to be a sign of weakness of the cardiac-respiratory apparatus. On a former page the observation was made that the mere elevation of one arm quickly produced a rise of pressure in the veins of the other hand. It is evident, then, that a very minute increase of blood flow into the superior vena cava can raise perceptibly the pressure within that channel and presumably within the right auricle as well. But there is not wanting direct evidence that the intra-auricular blood pressure mounts *pari passu* with that of the peripheral veins when these become distended during digestion, and it is wholly reasonable to assume that the former phenomenon stands to the latter in the relation of cause and effect.

Gaertner[10] describes a method for estimation of pressures within the right auricle of the human subject. The method consists in elevating the arm, bent about 120 degrees at the elbow, and noting the height at which a chosen vein just collapses to the level of the surrounding surface. This height above or below the mean point of entrance of blood into the auricle is assumed to represent the positive or negative hydrostatic pressure within that viscus. Many observations have led me to the conclusion that the method is impracticable as applied to the hand veins of most persons, but in the individual most thoroughly studied in the present research a large vein crossing the left radius two or three inches above the wrist showed very clearly a change of volume with change of elevation. It was found, according to this test, that, as the blood pressure in the veins of the hand rose after the ingestion of food, there was a somewhat parallel rise of pressure within the right auricle.

In the fourteen clinical cases representing well-marked lesions of the circulatory apparatus, the change of blood pressures following within an hour of dinner led to no general conclusions. In five cases there was a slight or moderate fall in venous pressure, in three a corresponding rise. In three cases there was a great fall of about 50 per cent. and in three a great rise. It is worth noting that a great rise of venous pressure and a drop of 10 mm. in arterial pressure occurred in an individual suffering from a very large aneurism of the ascending aorta. Another great rise in venous pressure after eating occurred in a man who died a few days after, suffering from mitral stenosis, aortic stenosis and the familiar signs of extreme break in compensation. His arterial pressure was too irregular to be estimated.

The evidence when sifted points to the conclusion that with well-compensated valvular lesions of the heart, with or without involvement of the kidneys, and in arteriosclerosis the ingestion of a meal is followed, at least during the first hour, by a more or less decided fall in venous blood pressure. At the same time there is usually a drop of from 5 to 15 mm. in the systolic arterial pressure. In the majority of these cases there was arteriosclerosis and the arterial pressure was abnormally high, ranging from 140 to 220 mm. In view of this fall of venous pressure in well-compensated pathologic circulations, it would seem at the outset ill advised to ascribe the rise of pressure so often found in normal subjects to functional heart weakness. But if there is truth in the hypothesis formulafed on a preceding page that a hyperirritability of the splanchnic dilating mechanism tends to develop in the pathologic heart, the results submit to reasonable explanation.

Though the problems of circulation belong in their last analysis to the field of chemistry, it is to the mechanics of the circulatory apparatus that the physician in actual practice must apply his efforts for the amelioration of disease. We are now in a position to ascertain the normal and pathologic variations of both arterial and venous blood pressure, and pallor or congestion of the skin serves as an index of the state of the superficial capillary circulation. The investigation of a considerable number of persons, both in health and with disease of the circulatory apparatus, shows that, while in normal individuals there is a somewhat wide variation of blood pressure in similar vessels, these variations fall within prescribed limits and the ratio of pressure in arteries and veins is fairly constant. Pathologic cases, on the other hand, fall into well-marked groups, and, while it would be indiscreet to draw general conclusions from the relatively meager data at hand, the following tentative classification may be permitted of the pathologic circulation as based on actual observation. All the subjects were from adult life:

GROUP I. THE RATIO OF MAXIMUM ARTERIAL TO VENOUS BLOOD PRESSURE INCREASED.

The ruling anatomic condition here was one of arteriosclerosis with cardiac enlargement, with or without valvular lesion. Arterial pressure is increased and venous pressure is positively lowered. A considerable proportion of cases belonging to this group present no palpable signs of arterial degeneration, but the cardiac dilatation found is evidence of long-continued arterial overstrain. It seems probable that in these cases either tonic arterial spasm is produced by some toxic agent circulating in the blood, as is suggested by Dr. W. H. Thompson[13] to explain the high tension observed in certain forms of nephritis, or that the circulation has been hampered by an increase in the viscosity of the blood.

In cases presenting well-compensated mitral insufficiency in early life, the venous pressure was somewhat raised as well as the arterial, but in older subjects with arteriosclerosis there was both a positive rise in arterial and fall in venous pressure, although in these and other cases of arterial degeneration the veins were often large and flabby. Persons belonging to this class are characterized by a pallor of the skin roughly proportionate to the departure above and below normal of arterial and venous pressures, respectively.

GROUP II. THE RATIO OF MAXIMUM ARTERIAL TO VENOUS BLOOD PRESSURE DECREASED.

This class embraces that familiar group of cases in which there is abnormal increase of resistance to the lesser circulation, with or without involvement of the left side of the heart. It includes a wide variety of both functional and organic disorders. It is probable that all cases of heart disease with gradually failing compensation enter this category. Two persons showing slight but positive signs of mitral stenosis, perfectly compensated, have both abnormally high venous pressures; while one, a large man of 40, has an arterial pressure of 112 mm., and the other, a woman of 23, has an arterial pressure of from 130 to 140 mm.

In two chronic cases verified by autopsy, the obstruction was wholly between the right and left sides of the heart. In one there was atrophy of the right lung with an old, nearly-obstructing thrombus of the right pulmonary artery. In the other there was marked sclerosis

13. Thompson: "Possible Cause of High Tension Pulse in Nephritis," Trans. Assoc. Amer. Phys., 1904, vol. xix, p. 14.

of the pulmonary artery and a pericardial effusion. In the former the skin was deeply congested, and in the latter it was pale. In a man of middle age coming to autopsy from uncompensated lesions of mitral and aortic valves the skin had been warm and congested; while in another patient of about 62 years with a break in compensation from mitral insufficiency the skin was markedly pale. It is difficult to see how pallor of the skin co-existing with high venous pressure can be explained except as a result of spasm of the capillary vessels themselves. In all these cases the venous pressure was high to very high and the arterial pressures were within normal limits.

Omitting consideration of such anatomic causes of obstruction to the venous circulation as are involved in emphysema of the lungs, pneumonia, etc., there is a very interesting class of cases presenting high venous pressures which, at the outset, present "functional" disorders characterized by symptoms of the gouty diathesis. Their clinical features recall the statements of Balfour[14] and of Gairdner: "Venous congestion, as it is usually termed, has been recognized by all physicians since the day of Galen as the first condition essential to the formation of the gouty diathesis."

Of several such cases which have been under my study one is in the person of a full-blooded active man of 55, of highly gouty heredity, who for several years has noted increasing dyspnea with exercise. About six months ago there were obvious, though faint, signs of mitral insufficiency with slight cardiac dilatation. The patient was greatly benefited by a course of Nauheim baths, but some weeks later complained of a feeling of tension in his veins, though the heart murmur had disappeared. I found his venous pressure about double the normal, while the maximum systolic pressure was but 103 mm. sitting and 112 mm. recumbent.

In a subsequent paragraph attention will be called to the signs of cardiac insufficiency, such as dilatation and the presence of mitral regurgitation, as arising, not primarily from high arterial resistance, but from excessive input of blood into the heart. That is, the cardiac changes, whether of failure or of compensation, are brought about by heightened intracardiac pressure, not in the phase of systole, but in that of diastole of the heart.

I have elsewhere called attention to reduplication of the first sound of the heart as evidence of abnormal elevation of blood pressure in the right ventricle. The sign, commonly manifested by a partial splitting of the first sound, is usually well marked in this whole class of cases, especially in conditions of fair compensation.

Two other cases belonging to this category deserve especial mention. One, represented by a man of 30, robust in figure, with a high color, has extensive, though quiescent, tuberculous infiltration of the lungs, and is well enough to do clerical work. He is extremely susceptible to "colds" and manifests other symptoms of the gouty diathesis. His venous blood pressure measured about twice the normal, and the maximal arterial pressure sitting was 126 mm., recumbent about 133 mm. It is worth noting, in passing, that in changing from the sitting to the recumbent position the arterial pressure reached its maximum of 136 mm. immediately and then gradually fell to 128 mm.; on resuming the sitting position the pressure fell unduly at first, to 120 mm., and then gradually rose to 126; the results probably chiefly represent the adjustment of the vasomotor mechanism to the strain of gravity. Such graduated changes of blood pressure with change of position are not uncommon. This patient's urine was high in color, specific gravity was 1030. There was no albumin, but there was a considerable sediment of casts of the hyalin and granular variety, the former being fairly dense and of medium breadth. The granules were coarse and not readily dissolved by a 4 per cent. solution of piperazin and, therefore, were not uratic.

The other case is that of a man of 41 who leads a professional life of phenomenal physical and mental activity. He has long suffered at times from attacks which are especially characterized by pain and swelling in the small joints and in the sheaths of tendons. The veins of his hands are usually distended, though the extremities are at the same time commonly subjectively cold. On examination the hand veins were turgid and their valves, for the most part, were incompetent. The venous pressure was considerably above normal. Arterial pressure, sitting, was 124 mm., recumbent 116 to 123 mm. I am told that two or three years ago this man's arterial pressure was found by a competent observer, using the Riva-Rocci instrument, to measure about 160 mm. The significance of this fact will appear later.

I am permitted to report the results of numerous urinary examinations made by others in this case. The urine usually is of high specific gravity and contains great numbers of hyalin and granular casts, but no albumin. It is a curious fact that during a recent severe attack of tonsillitis the casts completely disappeared from the urine and returned only after recovery from the disease.

These cases present, so far as I know, the first evidence indicating a specific relation between gouty metabolism and nephritis marked by the appearance of casts without albumin in the urine.

GROUP III. THE RATIO OF ARTERIAL TO VENOUS BLOOD PRESSURE NOT MATERIALLY CHANGED, BUT BOTH PRESSURES ABNORMALLY HIGH.

This class probably includes cases of all kinds characterized by plethora. Thus, in a young woman with well-marked chlorosis, though the veins were inconspicuous and the skin cool, the venous pressure measured about twice the normal and the maximum arterial pressure was over 146 mm. Her heart was somewhat dilated and hypertrophied.

The following three cases suggest the hypothetical career of the gouty subject as it will presently be traced. A somewhat robust professional man, about 40 years of age, who for years has suffered at times from typical attacks of gout and who has enjoyed immunity for ten months following a course at Carlsbad, presents a venous pressure some three times as high as normal, with an arterial pressure of 160 to 170 mm. No signs of arterial degeneration are manifested. A man of 57, addicted to alcohol some years ago and accustomed to strenuous physical exertion, recently became short of breath with exercise and dizzy with change of position. He has a retinal hemorrhage, and his venous pressure is easily three times the normal and the arterial pressure ranged on one occasion from 188 mm. sitting to 220 mm. recumbent; on another from about 175 mm. sitting to 188 recumbent. The sclerosis which is probably present is not obvious in the visible arteries.

It may be said, in passing, that in four individuals with retinal hemorrhage kindly sent to me by Dr. E. C. Rivers for examination all apparently had high arterial

14. Balfour: "The Senile Heart," p. 161.

pressures and at least two had correspondingly high venous pressures. Finally, in a female patient of about 72, obese in figure, who for years has complained of gouty manifestations of the most varied sort, with undoubted degeneration in the larger arterial trunks and showing edema of position, the arterial pressure ranges from 200 to 215 mm., while the venous pressure is but slightly, if at all, above normal. In none of the cases, except as cited, were there distinct urinary signs of nephritis nor was there any history of syphilis.

A number of the cases described above seem to me to mark, like milestones, the course of the biologic career of the gouty subject, using this term as generic for an extensive group of troubles which Professor Chittenden[16] has recently described as disorders of "intermediary metabolism." Starting with a metabolic dyscrasia which pathologic chemistry is rapidly illuminating, the first physical derangement of the circulation is manifested by a positive and relative increase of the venous blood pressure. This leads to augmented inflow into the heart with tendency to increase the amount of residual blood remaining in the ventricles at the end of systole. The heart may react by hypertrophy to this diastolic elevation of intracardiac pressure or it may simply dilate and its valves become insufficient. The gouty subject in this stage belongs to Group 2. The hypothesis further assumes that the accumulation of toxins in the blood irritates the peripheral vessels, possibly capillaries as well as arterioles, so as to cause in them a tonic spasm. This must give rise to heightened arterial pressure. For a time, as illustrated in Group 3, venous pressure also remains high, possibly from associated plethora, it may be from resistance offered the inflow of blood to the heart. Finally, the arteries, figurately speaking, resent the strain imposed on them and their vital tissues are replaced by insensitive matter and arteriosclerosis is established. The accompanying cardiac changes, whether of compensation or degeneration, form but necessary links in the chain of events.

In this connection attention may profitably revert once more to the case described at the beginning of this article. The patient, a woman of 63, is a typical member of Group 1, although her arterial pressure is out of all proportion to the insignificant amount of sclerosis evident. Until recent years she has been a woman of extraordinary vigor, but up to the time of her menopause she was periodically prostrated by attacks of headache, from which, since then, she has been free. It is a justifiable suspicion that the recurrent headaches were but the youthful symptom of that gouty diathesis which has since developed in other directions with more palpable signs.

GROUP IV. THE RATIO OF ARTERIAL TO VENOUS BLOOD PRESSURE NOT MATERIALLY CHANGED, BUT BOTH PRESSURES ABNORMALLY LOW.

There can be no doubt that a large variety of cases could be properly included in this group, though I have not especially followed the subject. In a young man and a young woman, each recovering from an acute exacerbation of an old rheumatic mitral disturbance, the arterial pressure measured 100 mm. in the one and 110 in the other, and the venous pressures were from one-half to one-third of the normal. More or less of the same condition is manifested by certain members of the neurasthenic type. In a patient having very high venous and normal arterial pressure whose death was unexpected and found to be due to pulmonary atheroma and pericardial effusion, the arterial and venous pressures began to fall more than twelve hours before dissolution. Toward the end, even in death from mitral stenosis, the surface veins are drained, the jugulars alone becoming distended.

16. Chittenden: "Some Problems of Intermediary Metabolism," the Shattuck lecture, 1903.

SUMMARY.

1. It is worth insisting that our knowledge of the circulation must be built up by induction from specific facts and not by deduction from general laws.

2. The venous system falls functionally into two natural divisions, the somatic and the splanchnic. In the superficial vessels of the former the blood pressure is easily measured and is determined partly by local causes and, in part, by the conditions of circulation elsewhere in the body. The channels of the latter have a capacity capable of accommodating the entire blood mass. The general arterial blood pressure is probably regulated chiefly by conditions determining the splanchnic circulation. Arterial pressure is raised by contraction of the splanchnic vessels and lowered by their dilatation. In the upright position blood tends to gravitate into the splanchnic area, but in the normal human subject there is a compensatory vascular contraction which somewhat overbalances the effect of gravity, so that, at least, the maximum arterial pressure is slightly higher in the upright than in the recumbent position. In debilitated subjects the vasomotor compensation may be deficient and the arterial pressure is decidedly lower in the upright than in the supine position. This postural draining of the blood is often evidenced by failure of the radial pulse when, in the erect position, the arms are elevated above the head. In the lower animals undue elevation of arterial blood pressure is prevented by reflex inhibition of the vasomotor center for the splanchnic area, the afferent branch of the reflex arc being the depressor nerve whose peripheral filaments find their stimulus in the strain of the contracting heart. The frequent failure of pulse in the elevated wrists of subjects of valvular heart disease who have high blood pressure makes it probable that an essential functional peculiarity of such disease is the development of a heightened irratibility of the depressor reflex.

3. Venous blood pressure may be raised either by increasing the inflow into or decreasing the outflow from the veins. The former result may be attained by local exercise of the member examined, the latter by elevating one arm while the venous pressure is measured in the hand of the other.

4. Muscular exercise, either local or general, increases venous blood pressure and presumably pressure within the right side of the heart.

5. Intrinsic contractility of the superficial veins plays an important part in their physiology. It is probably through such contraction that the valves are brought into action. The natural external stimuli to venous contraction are cold and light mechanical irritation. Venous pressure is lowered by cold which causes contraction of the arterioles and is raised by heat which dilates them.

6. The superficial veins of the extremities normally dilate and the pressure within them increases as result of inspiration. The respiratory movements of the veins correspond with the respiratory changes in arterial blood pressure. Transmission of cardiac pulsation into the veins is of frequent occurrence.

7. As a result of the processes attending digestion the pressure in the veins of the hand sometimes falls, at

others rises. The former result is probably a sign of most perfect physiologic compensation. The rise of venous pressure during digestion is probably due not to increased inflow from the capillaries, but to elevation of pressure within the right auricle, due to excessive input of blood from the splanchnic system. It may be looked on, therefore, as a sign of relative physiologic weakness.

8. Cases of disease which involve the apparatus of the circulation, when compared with normal subjects, can be naturally distributed among four distinct classes: (a) The ratio of arterial to venous blood pressure is increased. This is due to positive elevation of arterial pressure produced in some cases by disorders such, possibly, as vasomotor spasm or increased viscosity of the blood or in others by arteriosclerosis. (b) The ratio of arterial to venous blood pressure is decreased. This is usually due to positive elevation of venous blood pressure either by physical obstruction to the output from the right heart or by functional changes involved in the so-called gouty diathesis. Abnormally high venous blood pressure, not accounted for by mechanical causes, is a clinical sign of disorder of intermediary metabolism. (c) The ratio of arterial to venous blood pressure is not materially changed, but both pressures are abnormally high. Such a condition is found in general plethora, also persons in a certain stage of the gouty dyscrasia belong to this class. (d) The ratio of arterial to venous blood pressure is not materially changed, but both pressures are abnormally low. Cases of simple asthenia probably mostly fall within this class. The condition has been noted in individuals recovering from a break in compensation attending mitral insufficiency.

Although one and the same subject may, at different stages in the development of his dyscrasia, as in gout, occupy a place now in one, now in another of these classes, the discernment of the circulatory attributes by which the allotment must be made on any specific occasion, is of the utmost pathologic interest and therapeutic importance.[17]

DISCUSSION.

DR. S. J. MELTZER, New York City, said that the fall of the blood pressure during each inspiration can be explained as being due to an inhibition of the vasomotor centers. The distension of the lung during each inspiration which causes an inhibition of the inspiration causes at the same time also an inhibition of the other centers of the medulla oblongata.

PROF. W. P. LOMBARD, Ann Arbor, Mich., stated that he has done considerable work along this line. He believes that we are not dealing here with mechanical effects. The peripheral blood vessels are influenced by the vasomotor nerves, and are acted on by the vasomotor as well as the respiratory center. He has watched a little mirror resting on the veins on the back of the hand, and has seen a point reflected in it fluctuate rhythmically. It moved forward and back at intervals of from 7 to 14 seconds, then stopped for a time, and then started again, often with a jerk.

17. More than 125 persons have been investigated in conducting these researches. I am indebted for assistance to numerous friends and students, of whom special mention may be made of Dr. Shuler Craft and Messrs. C. C. Fuson and R. B. Blotz.

Supply and Demand.—It requires no argument to show that the medical profession is overcrowded. There are many successful men who are overworked, and there are many unsuccessful ones who would be underworked if they were the only doctors in a town of ten thousand each, but the great majority of physicians are directly influenced by the law of supply and demand, and there is no question but that each average physician could take care of at least twice the population that now falls to his lot.—*Medical Times.*

THE TREATMENT OF THE INTRACRANIAL COMPLICATIONS OF MIDDLE-EAR SUPPURATION.*

EDWARD BRADFORD DENCH, M.D.
NEW YORK.

The statistics given in this paper are taken from my own operating book, it being my purpose to record here simply personal experiences and to deal very little with the general literature of the subject, owing to the small time allotted for the discussion of so important a topic.

The intracranial complications which may follow a middle-ear suppuration are, first, epidural abscess; second, brain abscess; third, sinus thrombosis, and, fourth, general meningitis. The meningitis may be either of the serous or the purulent type.

From my own private statistics I can report 40 cases of epidural abscess, 14 cases of brain abscess, 44 cases of sinus thrombosis and 5 cases of general meningitis. This list refers simply to cases operated on. Of course, some cases of meningitis were met with which were considered inoperable, but these statistics deal simply with cases operated on.

Of the 40 cases of epidural abscess, 4 died: one of pneumonia, secondary to sinus thrombosis, two of general meningitis—in one of these cases the meningitis occurring over one month after the evacuation of the epidural abscess—and one of diabetes.

Of the 14 cases of brain abscess, 10 were located in the tempero-sphenoidal lobe, and of these 4 were cured and 6 died. The 4 remaining abscesses were located in the cerebellum, and all of these cases terminated fatally.

There were 44 cases of sinus thrombosis, of which 10 died and 34 were cured. Of the 44 cases the internal jugular was not excised in 28, and of this number there were only 4 deaths. The causes of death were as follows: One died of pulmonary thrombosis, one of diabetes, one of septic pneumonia, and in the remaining case the cause of death is unknown. Of the 16 cases in which the internal jugular was excised, 10 recovered and 6 died. The causes of death in these cases were as follows: One died of hemorrhage into the spinal canal, one of general pyemia, which condition was present before the operation was performed, a pneumonia coincident with the acute middle-ear inflammation rendering operation absolutely impossible until a very late date; two died of double pneumonia, one of gangrene of the lung and one of gangrene of the tissues of the neck.

Of the 5 cases of general meningitis operated on, one recovered as the result of subdural drainage; in the 4 remaining instances, treated both by subdural and ventricular drainage, death followed in every instance. These statistics would go to show that both epidural abscess and sinus thrombosis are conditions which are not ordinarily attended by any great mortality if subjected to operative interference early.

Out of 40 cases of epidural abscess, in only two was death due to general meningitis. This would seem to indicate that in epidural abscess Nature makes an effort to wall off the area of meningeal inflammation from the general cranial cavity and thus effect a spontaneous cure. The possibility, however, of late infection of the general meninges in these cases must be borne in mind. This is evidenced by one of the fatal cases reported, in which the general meningitis did not make its appearance until the mastoid wound was practically healed. It is prob-

* Read in the Section on Laryngology and Otology of the American Medical Association, at the Fifty-seventh Annual Session, June, 1906.

able that where a fatal meningitis occurs at such a late period the meningitis is due to infection through the wound. In the case cited, the patient had been treated at the dispensary and her hygienic conditions at home were not of the best. There was abundant opportunity for reinfection of the wound while at home.

Regarding the treatment of these cases of epidural abscess, very little need be said. It is simply necessary to evacuate the pus and to expose the infected area freely by removing the overlying bone in every direction until firm dural adhesions are reached. I do not advocate the removal of bone until healthy dura is seen, as there is danger of reinfection of this healthy dura. The bone should be removed until the line of adhesion between the dura and bone can be made out; in other words, the entire abscess cavity should be exposed, but exploration should not go beyond this point. Simple packing of the wound with either iodoform or sterile gauze completes this operation.

In considering the cases of sinus thrombosis, in 28 out of 44 cases, in which it was not necessary to excise the internal jugular, death resulted in but four instances. In other words, sinus thrombosis recognized early and operated on early will be almost certainly cured. It might be argued from the causes of death in the four fatal cases in which the jugular was not excised, that excision of the jugular would have prevented the fatal termination. This may possibly have been true of the case dying of pulmonary thrombosis, although I think that such a conclusion would be rather far-fetched. In the case where the septic pneumonia was the cause of death the pneumonia would certainly not have been averted by ligation of the jugular, while ligation of the jugular in the case of the patient dying of diabetes certainly could not have prevented the fatal termination.

Of the 16 cases in which the internal jugular was excised, a fatal termination followed in 6. In the 2 cases dying of double pneumonia and in the one dying of gangrene of the lung, pulmonary infection had already taken place before the cases came under observation. In the case dying from hemorrhage into the spinal canal the cause of death was entirely independent of the condition of sinus thrombosis, and consequently the case should not be considered a fatal case of sinus thrombosis. In the case dying of gangrene of the neck the systemic infection was present from the incipiency of the disease, and, although jugular excision was performed as soon as the symptoms indicated involvement of the vein, the operation failed to save the patient's life.

We are brought here face to face with a very important question and one which has been the subject of much discussion; that is, whether in every case of sinus thrombosis we shall place a ligature around the internal jugular prior to opening the sinus, or whether we shall follow the older practice of exploring the lateral sinus first and resort to excision of the internal jugular in case this seems to be demanded by the condition of the sinus. Much is to be said in favor of each plan of procedure. Personally I do not believe that it is necessary to place a ligature about the jugular as a preliminary step in every case where we wish to explore the lateral sinus, or in every case where we find a clot within the sinus.

My own plan of procedure is to expose the sinus from a point just above the bulb to a point well beyond the knee, exposing at least an inch, and, better, an inch and a half of the lateral sinus. Pressure on the sinus at its lower portion is then made and the sinus opened. If a clot is found, this is removed by means of the curette, the incision in the sinus wall being gradually extended backward until free hemorrhage occurs from the torcular end of the sinus. If necessary the bony covering of the sinus is removed as far back as the torcular. As soon as free hemorrhage occurs it is checked by means of pledget of iodoform gauze inserted between the sinus wall and the skull. Pressure is then removed from the lower end of the sinus, and if free hemorrhage does not occur from below a curette is inserted into the sinus and the clot removed from the bulb, care being taken, prior to this procedure, to apply pressure on the internal jugular in the neck so as to prevent the possible entrance of air into the vein. If the removal of the clot from the lower end of the sinus is followed by free hemorrhage, this is taken as presumptive evidence that the jugular bulb does not contain a clot. This free hemorrhage is, by no means, absolute evidence that there is not a clot in the jugular bulb, and that such a clot may not extend downward into the vein. From the series of cases reported, however, in which this plan has been followed, it must be conceded that this view is well taken. In fact, I have seen several cases in which free hemorrhage did not take place from below, and in which the jugular was not interfered with, recover completely after clearing out the clot from the sinus. Free hemorrhage occurring from below, a plug of iodoform gauze is inserted into the lumen of the sinus, packed firmly down into the bulb, and the remainder of the wound dressed in the ordinary manner. If hemorrhage does not take place from the bulbar end of the sinus, I believe that the surgeon should always proceed to excise the jugular immediately, unless the condition of the patient does not warrant this procedure, or unless the case has been under observation for only a few hours, and has shown no evidences of general septic infection. In either of these events it is better to return the patient to bed for a few hours, allow him to rally from the shock of the first operation, and subsequently to excise the jugular, if necessary. In cases where the general condition of the patient is good, jugular excision should be performed at the first operation, if free hemorrhage does not take place from the bulbar end of the sinus.

In performing the operation, it is well to place the initial ligature about the vein as low down as possible. The vein is most superficial just beneath the omohyoid muscle. In some cases, however, it is necessary to ligate the vein lower, that is, just above the clavicle, and in two instances, I have placed a ligature about the vein less than half an inch above the innominate vein. The excision of the vein should be complete from its lower point of section to a point as close to the base of the skull as possible. I usually divide the upper end of the vein well above the posterior belly of the digastric muscle. All tributary veins must be divided between two ligatures during the procedure of excision. Any enlarged glands lying along the course of the vein, and in severe cases these glands are always present, should be thoroughly removed.

It has been my own practice to close the wound in the neck by interrupted sutures in all of these cases except where very severe infection of the cervical tissues is present. The tissues of the neck are not sutured layer by layer, but the sutures are passed simply through the skin, and the dead space in the neck is drained either by a wick of iodoform gauze or by a thin cigarette drain. The upper portion of the wound, at the base of the skull, where the upper end of the jugular is divided, is left

open, and a strip of iodoform gauze is carried down to the severed jugular, so as to drain thoroughly the upper portion of the wound and to prevent infection of the lower portion from above. Primary union has taken place in over 50 per cent. of these cases.

The results of operative treatment in brain abscess are much less satisfactory than are those in the conditions which we have already considered. My own statistics show but four recoveries out of fourteen cases. This, of course, is a very high mortality. The diagnosis of brain abscess is, in many cases, so obscure that the abscess is only evacuated at a very late date. Where localizing symptoms are present, such as aphasia, sensory or motor paralyses, or cerebellar symptoms, the surgeon may be able to locate the abscess with a certain amount of exactness. In a very large proportion of cases, however, the diagnosis must depend on indefinite symptoms, such as persistent headache or sleeplessness, a septic temperature in cases of acute abscess, or a persistent, subnormal temperature, in cases of chronic abscess, general emaciation, and in some cases, optic neuritis. The blood count in these cases is of considerable value in arriving at a diagnosis. We almost invariably find an increased percentage of polymorphonuclear cells on examining the blood. If suppuration in every other part of the body can be excluded and there is a history of aural suppuration, such an increase in the polymorphonuclear cells, together with other symptoms, would warrant the surgeon in exploring the cranial cavity.

The majority of abscesses of otitic origin are located in the temporo-sphenoidal lobe. The next most frequent site is the cerebellum, and I have seen one case where the abscess was situated in the second frontal convolution.

In exploring the temporo-sphenoidal lobe, the surgeon may expose the dura either by removal of the tegmen tympani, or, after removing all foci of suppuration from the middle ear, the temporo-sphenoidal lobe may be explored through the squamous plate of the temporal bone. Unless at the time that the mastoid operation is performed there is caries of the tympanic roof, and removal of this carious bone exposes diseased dura, I do not think that the tympanic roof should be the site chosen for the exploration of the temporo-sphenoidal lobe. If diseased bone is found in this region, naturally the surgeon would follow up the path of infection to the meninges, and through these to the brain substance. In the absence of such signs, however, I believe that in the evacuation of a temporo-sphenoidal abscess the brain should be exposed by an appropriate incision made above the zygoma. The cranial cavity is easily entered at this point, a large area of bone can be quickly removed by means of the rongeur, the dura quickly exposed and incised, and the brain substance explored in every direction. After an opening has been made above the zygoma, it is then perfectly feasible to remove the roof of the middle ear and mastoid cavities, thus enlarging the exposed dural area.

For exploring the brain a long, sharp, narrow-bladed knife is the best instrument, or some prefer a grooved director. If the knife is used, incision should be made parallel to the convolutions, rather than across them, so as to avoid unnecessary hemorrhage. As soon as pus is encountered, either by the knife or the director, a long, narrow-bladed retractor should be slipped along the exploring instrument, until the abscess cavity is entered. Gentle traction should then be made on the brain, and the second blade of the retractor should be slipped into the cavity and the retractors separated. In this way the operator is able not only to thoroughly evacuate the abscess, but to also obtain a fairly good view of the interior of the cavity.

This procedure appeals to me rather more than does the introduction of the encephaloscope for purposes of exploration. I much prefer the cautious introduction of a sterile finger into the brain abscess cavity, to the introduction of the encephaloscope.

I am not in favor of washing out these abscess cavities at the time of operation unless, on examination, there seems to be a fairly dense wall to the cavity. Under these circumstances, the cavity may be washed, either with a weak bichlorid solution or a normal salt solution.

The method by which these cavities are to be drained is a matter of great importance. In three of the successful cases reported the cavities were simply packed lightly with either sterile or iodoform gauze. In one of the successful cases gauze was inefficient, and the patient made a prompt recovery when rubber drainage tubes were substituted for the gauze. At present I believe the best method is to introduce a rather large cigarette drain into the cavity; on the removal of the cigarette drain the walls of this canal will be found to be fairly firm. The cavity can then be easily cleaned under direct illumination through the encephaloscope, and the cigarette drain can either be replaced or the cavity packed lightly with boric acid gauze, sterile or iodoform gauze, according to the choice of the operator.

From the experience of McEwen and others, it would seem that the less frequently these abscesses are disturbed or redressed, the better. I must say that in my own cases, however, the dressings have been changed either daily or every second day. The cause of death in my cases has invariably been a general meningitis. In some of these the infection was clearly through the subdural space, in others through the ventricles.

With reference to the exploration of the cerebellum, the cranial cavity may be opened either just below the superior curved line, the opening being first made with the chisel and then enlarged with the rongeur, or the mastoid wound may be simply extended backward so as to expose first the lateral sinus, and then the cerebellum. The cerebellar fossa is undoubtedly more easily opened by the elevation of a flap of pericranium, so as to expose that part of the occipital bone lying beneath the superior curved line. The anterior border of this flap should correspond to the incision for opening the mastoid; the posterior border should be close to the median line. In this way, after the cranial cavity has been entered, the bone may be removed forward toward the mastoid wound until the exploratory opening and the mastoid wound are joined. This gives a very large field of exploration, and enables one to carry on exploration with the utmost thoroughness. The only drawback to the procedure is the profuse hemorrhage which occasionally occurs from the emissary vein. This, of course, can be readily checked by plugging the foramen with a bit of sterilized wood. If the vein is large, however, it is rather difficult to expose that portion of the cerebellum lying just posterior to the sinus. It is for this reason that, in most cases, I prefer to enter the cerebellar fossa behind the mastoid foramen rather than to work backward from the original mastoid wound.

The technic of draining a cerebellar abscess is precisely the same as that described in speaking of temporo-sphenoidal abscess.

The treatment of an otitis meningitis is, perhaps, the most unsuccessful problem with which the otologist has to deal. Otitic meningitis may be either of the purulent or serous variety.

These cases, however, are not entirely hopeless. I have already reported, before the American Otological Society, a case of otitic meningitis which recovered after subdural drainage. At the Seventh International Otological Congress at Bordeaux, Lermoyez[1] has reported two cases of otitic meningitis, the one cured by the complete radical operation with craniectomy and lumbar puncture, and the second relieved by radical operation, craniectomy incision of the dura mater and repeated lumbar punctures. The generalizations of Lermoyez are exceedingly good. He believes, first, that the purulent focus in the midle ear should be thoroughly cleared out; second, that intracranial pressure should be relieved by means of repeated lumbar punctures. Failing in this, that a sufficient area of the skull should be removed to relieve intracranial pressure rapidly followed by incision of the brain substance, in case the symptoms persist.

In my own practice, I have followed all these suggestions; that is, I have employed lumbar puncture, craniectomy, subdural drainage and ventricular drainage. In only one case has operative treatment been successful, namely, a case of chronic suppuration in which subdural drainage was employed.[2] In a few cases, where ventricular drainage was resorted to, the symptoms temporarily subsided, only to recur after a short time, and in all instances, a fatal termination followed. I am inclined to believe that the best plan of treatment is to relieve the pressure first by early lumbar puncture in cases of meningitis, and, failing in this, to relieve the increased pressure by a free craniectomy, followed by incision of the dura and of the cerebral substance. If the ventricles contain much fluid ventricular drainage will be established without any special effort on the part of the operator. If ventricular distension is not sufficient to admit of their free drainage after brain substance has been penetrated for a distance of an inch, I am inclined to believe that it is better surgery simply to incise the brain substance, and relieve tension in this way, rather than to attempt to drain the ventricles by deeper incision.

In cases of otitic origin, the region chosen for exploration in craniectomy is usually that region just above the external auditory meatus. Here the descending horn of the lateral ventricle lies at about a depth of an inch and three-quarters below the surface of the temporo-sphenoidal lobe; that is, I am speaking now of normal conditions, and where the ventricle is distended with fluid the brain substance is compressed and the ventricular cavity opened before the brain substance is penetrated to this depth. If the ventricle is opened, I believe that a cigarette drain inserted into the ventricular cavity affords the most perfect form of drainage.

Otitic meningitis, either of the purulent or serous variety, is, apparently, the condition which has most baffled the efforts of the surgeon. While the results of operative treatment are far from encouraging, I believe that it is only by persistence along these lines that the condition will finally be controlled. Better technic and perhaps earlier operation, will undoubtedly save many cases which were formerly considered hopeless.

1. Transactions Seventh Int. Otological Congress, Bordeaux, 1904, p. 348.
2. Transactions of the American Otological Society, 1896, vol. vi, p. 315.

DISCUSSION.

DR. CHARLES BALLANCE, London, England, said in regard to the varieties of meningitis that there are cases of meningitis serosa, cases of tuberculous meningitis and cases of suppurative meningitis. He thought this is the best classification because the various forms of meningitis which produce suppuration can not be very well separated. Meningitis serosa often occurs in relation to acute mastoid cases and the symptoms are characteristic; they are a rise of temperature, slowing of pulse, vomiting, drowsiness, stability of the pupil and some redness of the optic disc. The condition can be relieved at once by lumbar puncture, which in many cases ought to be employed more than it is. In meningitis serosa lumbar puncture may save some patients from meningitis purulenta, hence it is an operation to bear in mind. With regard to cases of tuberculous meningitis which arise from infection of the temporal bone, he had reported one case in which there was vomiting, squint and paroxysmal headache, as a sequence of tuberculous disease of the temporal bone. The patient recovered entirely after complete ablation of the local disease. The question arises, Can anything more be done? He thought there ought to be drainage of the subarachnoid space, not of the subdural space, and provision for drainage from the ventricle. In suppurative meningitis, to which Dr. Dench referred, a remarkable series of cases has been published. In one case the patient was dying of suppurative meningitis, and the operator exposed the occipital lobes, opened the subarachnoid space and introduced gauze drainage. Whether he opened the ventricles or not Dr. Ballance did not know. At any rate, after a desperate illness, this patient entirely recovered. Methods for treatment of purulent meningitis are encrusted with conventionality. In many cases of suppurative meningitis the infected meningeal spaces ought to be drained by means of operation; also an antitoxic serum which corresponds to the organism that has produced the suppurative meningitis within the skull should be employed.

Another question Dr. Dench referred to was treatment of abscess of the brain. Dr. Ballance disagreed with him in the statement that temporosphenoidal abscess is twice as frequent as cerebellar abscess. The experience in two hospitals in London is that cerebellar abscess is twice as frequent as temperosphenoidal abscess. Brain abscess being much more frequent in the young than in the old, the posterior fossa is more often involved than the middle fossa. With regard to treatment of brain abscess, the pathway of infection from the meninges into the brain is the pathway through which drainage should be effected. When the infection has crossed the meninges and reached the cortex, it is unable to produce a very wide destruction in the cortex because the cortex is vascular and is rich in connective elements. Consequently, as a rule, there is a rather narrow channel through the cortex by which the infection passes from the meninges into the white matter. In the white matter this condition is reversed and dissolution of the white matter is widespread. The ideal surgical treatment is to drain the abscess through the stalk. By that means the difficulties surgeons have to combat in securing good drainage of an abscess in the liquid texture of the brain are entirely overcome, the patient gets well rapidly and there is no danger of meningitis. Another point Dr. Dench spoke of is venous infection. Infection of the great channel of the lateral sinus commonly occurs, and the first indication of danger is not clotting of the blood, but the decomposition of the clot. Dr. Ballance maintained that clotting in the sinus is an effort of Nature to prevent the extension of the disease, and therefore that it is distinctly beneficial, and the question whether the vein should be dealt with or not is a question of what organism is going to infect the clot. Is it one that will produce a local abscess if injected into the arm, or is it an organism that will produce a spreading gangrenous cellulitis if injected into the arm? If the organism is a cause of local suppuration, that abscess, when present in the sinus, can be incised, and there is no fear but that the patient will get well. If the organism is a cause of spreading infection

there will be a spreading septic clot, which may even reach the heart. Under the latter circumstances it is the duty of the surgeon to deal with the internal jugular vein, and he thought the best plan is to divide it as low down in the neck as possible and to ligature all its tributaries, and then to bring it out in the highest part of the neck incision and suture it there. Why cut it off at the base of the skull? Within the vein there must be infection. The wound in the neck in a certain number of cases would not become infected if the internal jugular were used as a drainage tube.

As to the time of operation, if there is doubt as to the type of infection, he would say do the operation. One of his first cases, published in 1889, interested him much with reference to the question whether the mastoid and vein operation should be done first. One night he was called to a nurse, whom he knew, who was about 25 miles from London. He found her in a cottage, and he had very few things with him, but with a knife which he borrowed and with some silk threads he tied the internal jugular vein. He put her in a carriage and drove her to London to a surgical home, and at 5:30 the next morning did the complete mastoid operation, turning out a suppurating clot from the sinus as far back as the protuberance and completing the operation on the vein. She convalesced rapidly. The ligation of the vein before the journey may have prevented the occurrence of septic pulmonary embolism.

MR. HAMILTON A. BALLANCE, Norwich, England, said that one very interesting case of lateral sinus pyemia, which illustrates the use of antitoxic serum in these cases, was that of a woman who had an otitis and subsequently lateral sinus pyemia, on whom he operated in the usual way, and she was very gravely infected. She had abscesses in the kidney, in two joints, in one tonsil and in the subcutaneous tissue. From every one of these abscesses the *Streptococcus pyogenes* was obtained. The effect of antitoxic serum in this case was marked. She also had an attack of facial erysipelas due to the streptococcus. He believed the use of the antitoxic serum in this case was the means of saving her life.

DR. N. H. PIERCE, Chicago, said that it is very difficult to make a differential diagnosis in many cases between septic purulent meningitis and serous meningitis. Even the fluid which is drawn off in lumbar puncture may give very little evidence as to which kind of meningitis it is and the only way to make a diagnosis sure is to wait; if it is serous meningitis the patient gets well immediately, but if it is septic meningitis the patient is pretty sure to die. Therefore, all cases of meningitis should be treated as if they were serous in character. Lumbar puncture should be made very early and sufficient fluid drawn off for bacteriologic, microscopic and chemical examination, and not only that, but a sufficient quantity to relieve the pressure within the meningeal spaces. Yet patients recover who have the most apparently hopeless cases of septic meningitis. He reported a case of septic meningitis in a child 10 years old, which resulted in recovery, about a month after an operation for mastoid abscess, whose temperature rose to 107.5. This patient recovered with drainage through the arachnoid spaces, after a prolonged course. He had used the streptococcus serum in a number of these cases, not only in sepsis arising from ear diseases, but sepsis arising in other parts of the body; for instance, in a case of laryngeal phlegmon, with absolutely no apparent beneficial results. The matter of streptococcus serum is an unknown quantity at present. The chances are there are many germs which have the morphologic qualities and characteristics of the streptococcus, but which vary in their intrinsic nature very much; that is the only way the variance in the results following the use of antistreptococcus serum can be explained, obtained by different observers. Regarding the treatment of the jugular bulb and sinuses, he believed the jugular should not always be tied in these cases nor the sinus opened for purely exploratory purposes. If the process going on in the sinus from the wound can be controlled, tying the jugular is unnecessary. He believed that the jugular should first be tied whenever a curette is to be introduced down toward the bulb or when the bulb is to be exposed or when the wound is not co-extensive with the thrombus. In marked general symptoms of sepsis, the jugular should be tied when the thrombus is palpable and approaching to the bulb.

DR. F. L. JACK, Boston, spoke of one minor point to be considered in the treatment of brain abscess, that is, the methods employed for the establishment of drainage. It seems to him drainage is most important, and in his experience gauze has been very efficient, acting very much as a rubber stopper would in the sinus leading to the abscess. He thought that was the only dressing that could be employed at a time when he had a number of cases, and they resulted fatally without exception. He discovered that the cause of death in some of the cases was lack of drainage, and he determined that in the next brain case he would insure perfect drainage. He used the old-fashioned rubber drainage tube, which he does not suppose is used at all in these days, and the patient recovered. Since then he has employed this open method, has avoided using gauze in every case, and has had very much better results. Gauze ought not to be used for drainage in brain abscess. He differed a little from Dr. Dench in the statement that an opening through the attic tympanum is insufficient to drain properly the temperosphenoidal abscess. It may be insufficient in some cases, but in his hands in three or four cases it had been entirely sufficient. It had enabled him to remove the bone from the roof of the attic tympanum and the roof of the auditory canal, to find almost the spot where the inflammation extended from the attic through the bone and through the dura, and he had been able with the small knife Dr. Dench described in two cases to find the exact spot and put the knife into the abscess cavity. In these cases he found it simple enough. He trephined the bone and opened from the squamous portion, and had two or three patients recover. One instance of recovery from suppurative meningitis was unique, and up to two or three years ago a similar case had not been in the City Hospital. He was called to see a man moribund, having a history of suppurative middle ear disease and extension of pus into the cranial cavity, undoubtedly a meningitis, from all symptoms. The man was *in extremis* and he declined to operate, the conditions at the house being unsatisfactory. The man, Dr. Jack learned afterward, recovered. A year after that he had an inflammation in the other ear and a meningitis which killed him. At the autopsy the remains of the meningitis on the opposite side were found.

DR. E. B. DENCH, New York City, referring to what Mr. Ballance said about streptococcus serum, said that in one of the fatal cases he had reported the streptococcus serum was used without benefit. The method of entering the cranial cavity must depend on the nature of the case.

TUBERCULOSIS OF THE MIDDLE EAR AND MASTOID.*

E. A. CROCKETT, M.D.

BOSTON.

In this paper I shall report a few cases of tuberculosis of the middle ear and mastoid, all drawn from private practice and observed over a considerable period of years. Of course, under the favorable circumstances of private practice we may expect a more favorable prognosis, both from the increased vitality of cases treated under such favorable conditions and from the fact that the hygienic surroundings can be made as perfect as possible. Still the general conclusions of this paper are true as regards a great many hospital patients seen in the last 16 years, as well as the few cases herein reported.

I am sure that cultures taken with special reference to the bacillus of tuberculosis as a routine measure in a large series of cases will show a large number of such infections, which clinically show no diagnostic symp-

* Read in the Section on Laryngology and Otology of the American Medical Association, at the Fifty-seventh Annual Session, June, 1906.

toms. They constitute the majority of the severe mastoid cases seen in infants. It is, of course, decidedly more difficult to isolate the tubercle bacillus than the ordinary septic organisms commonly seen and the absence of the bacillus can not be regarded as proof positive of the absence of the disease unless the pus or other septic material is injected into a guinea-pig and the results noted, but in the the extreme cases there can be no doubt as to the diagnosis, without culture, from the unmistakable clinical signs.

First and most important of such symptoms in my experience has been the appearance of a small glandular swelling in front of the tragus either before or coincident with a middle-ear discharge. This gland is free from parotid involvement in its early stages, but later comes parotid and subzygomatic induration with or without local abscess formation and in extreme cases after weeks or months the formation of postural abscess and infection of the glands in the neck. In the severe type the process is very apt to begin in the middle ear or temporal bone and to be attended by an early facial paralysis on the affected side and later by the formation of large sequestra either of the mastoid or petrous portion or both. In this case the ossicles are apt to slip out easily and may be often found in the syringing fluid; and there may also be tuberculous processes in other bones of the body. The clinical picture thus presented, in the extreme cases, of the early parotid swelling and subzygomatic induration following or prior to the discharge of the ear in infants or young children and followed by facial paralysis, postaural abscess and general infection of the glands of the neck, with malnutrition and emaciation is so typical that the diagnosis can be almost always made by a superficial observation. The prognosis in such a case without operation is absolutely bad, although a few undoubtedly recover after sequestra are formed and the process thus self-limits itself. Many die from exhaustion due to general septic infection, malnutrition or tuberculous involvement of other parts of the body, especially general miliary tuberculosis or tuberculous meningitis. I will endeavor to show by this series of cases that these bad results are rare under treatment, even in extreme neglected cases. Much more commonly seen than these severe infections is an infection of the middle ear without involvement of other tissues or of the mastoid, evidently proceding *via* the Eustachian tube and generally, though not always, a complication of pulmonary tuberculosis. Here the process begins with the general appearance of an ordinary otitis media acuta with a red, infiltrated membrane, but without very much pain or general systemic disturbance. This perforates itself and until it becomes infected by other organisms the discharge is of a sero-sanguinolent character. The perforation rapidly enlarges in these cases and involves the malleus and incus until these two ossicles are completely necrosed so that they fall out or come away in syringing the ear.

It has been my experience that it is impossible to check one of these cases short of the complete destruction of the membrane and partial destruction of the malleus and incus.

I cite two typical cases of this class of infection:

CASE 1.—P., healthy looking boy, aged 5½ years, was first seen on Nov. 7, 1903.

History.—There was well marked tuberculous history in his family, but he did not at this time, nor has he at any time since, shown any signs of any other tuberculous infection.

Examination.—His left ear was normal, his right ear showed a double perforation anterior and posterior to the malleus with a slight serous discharge.

Treatment.—The ear was put on dry treatment with the use of boric acid powder. The perforation rapidly increased in size under treatment and destroyed about half the malleus and the whole of the incus in the course of about one year's time.

A culture taken from the discharge of the middle ear showed tubercle bacillus. As soon as this diagnosis was made treatment was changed to wipe dry and powder with a combination of iodoform and boric acid, equal parts. The ear gradually stopped discharging after this treatment had been faithfully carried out three months. This child has been seen within three months with a recurrent discharge from this ear which still showed tubercle bacillus, the ear having been perfectly dry prior to this time for more than six months.

Present Condition.—The condition now is a large perforation showing the head of the stapes, smooth membrane of the middle ear without granulation and about half the malleus hanging down without any membrane attached to it. The boy is now 9 years old and in splendid health. He has been out in the open air for five months without any impression being made on the discharge of the ear.

CASE 2.—S. C., aged 20 years, had been in Texas with pulmonary tuberculosis and the process had been supposed to be checked.

Course of the Disease.—Patient was first seen in 1900 with what was apparently an ordinary acute inflammation of the middle ear. This rapidly increased until without pain the process had destroyed the drum, malleus and incus, after which the ear ceased discharging and has now been dry nearly three years. Tubercle bacillus was isolated in this midlle ear also, the pulmonary process is apparently checked and the patient has been at work in the North for three years and is in good general condition.

As illustrating the severer type of tuberculosis the following may be of interest:

CASE 3.—M. R., aged 4 years; lived in a suburban town; one of a large family of children; all the other members of the family in good health.

History.—First seen in 1895. A family servant had pulmonary tuberculosis and had remained some months in the house before the diagnosis had been made. When this child was first seen his general condition was excellent. He had a discharging ear, with a postaural abscess perfectly painless to pressure and not red.

Operations.—The first operation performed was done by the family practitioner, who merely opened the abscess. About two months after this the discharge from the abscess was very foul and I did a mastoid operation, removing a large sequestrum comprising most of the mastoid portion of the temporal bone.

Postoperative History.—Within a year a sequestrum comprising a portion of the cochlea, a carious malleus, a tuberculous sequestrum of the lower end of the radius and a portion of one rib had been removed at successive operations. The total length of time of the extension of the process was about three years. He lived largely out of doors and has had no trouble of any sort for about five years. He is now about 15 years old and in good physical condition.

CASE 4.—N., aged 1½ years; was first seen in 1896.

History.—This baby's aunt had a very rapid pulmonary tuberculosis and had been very much attached to the child, often held it in her lap and kissed it, the family not recognizing the danger of such procedure. The child lived in an apartment in a suburban city under only fairly favorable conditions. The child first showed a cold abscess over the mastoid before the discharge from the middle ear was noticed.

Operations.—Between the time the child was 1½ and 5 years of age five successive operations were performed, two on the mastoid, one on a tuberculous sequestrum in the forearm and one for the removal of the last phalanx of the toe, and the process microscopically was diagnosed tuberculous in each instance.

Postoperative History.—The ear did not stop discharging

until the child was 8 years old, when sequestrum was removed from the external auditory canal comprising a considerable portion of the cochlea. This child is now also in excellent condition and has no sign of tuberculous process anywhere.

CASE 5.—T. P., aged 7 months; lived on a large estate in the country and had never been in a city or public conveyance of any kind since he was born.

History.—The parents were both healthy. There was no tuberculous history in the family. The child lived inland at an altitude of about 400 feet and under the most perfect hygienic conditions, but a family servant had tuberculosis and had been allowed to remain on the place until she died, although not in the house occupied by the child. Another possible source of infection in this case was afforded by a sick horse recently imported from Texas. This horse was shot for some gland disorder, but not before two of the grooms had become infected with large glands, the extent of which I do not know. When first seen this child showed a discharge from both middle ears, with numerous granulations, swollen parotid on both sides, postaural abscess on one side and innumerable gland masses in the neck, some of which had broken externally and were discharging pus. The first point of infection noted in this child had been the to me very characteristic one spoken of before of the small gland anterior to the tragus.

Operations.—This child was operated on almost persistently for two years. I did two mastoid operations on it and removed 16 glands from one side of the neck, exposing the internal jugular for about 1½ inches; a general surgeon removed 18 glands from the other side of the neck and a portion of one rib. The child suffered badly from malnutrition, and when it was nine months old it weighed only one pound more than its birth weight. It was kept in the open air for two years during this operative period. The process in both middle ears was also destructive and the malleus and incus in one ear and the malleus in the other ear came away in the syringing fluid.

Present Condition.—This child is now 4 years old and except for its innumerable scars and pretty decided deafness, he is as healthy a child as one would wish to see. The middle ears are both dry.

CASE 6.—A more recent case and one to illustrate what surgery may do even in the most desperate conditions is that of a 10-months-old baby seen last October for the first time.

History.—This child weighed only 9 pounds 8 ounces and presented clinically infantile atrophy. It weighed 7 pounds at birth. The source of infection was not known, but the right ear began to discharge at three months, followed almost immediately by a well-marked parotid swelling which shows at the present time. The facial nerve was paralyzed; within five weeks there was involvement of the glands of the neck, many suppurative, and there have been five or six operations for their removal. Before I saw it a postaural swelling developed.

Operation.—There was a question in the mind of the attending physician whether the child would survive etherizing, as it had nearly died from collapse following one of its operations, but it seemed to me wise to give the child the benefit of the doubt. It was etherized and two large tubercular sequestra removed. The child stood the operation well and the mastoid wound healed rapidly. The temperature came down nearly to normal, once previously having been 101 to 102 degrees.

Present Condition.—The middle ear is still discharging somewhat. The glands of the neck have nearly all disappeared; the facial paralysis still remains. The child gained two pounds the first month following the operation and now weighs 15 to 16 pounds and will, in my opinion, go on to complete recovery. It has been kept in the open air through the whole of the last winter, but has remained in the town where it was born.

I merely wish to prove by the history of this case that no matter how severe the tuberculous infection, the bone lesion limits itself very easily and if the process is attacked wherever it may manifest itself that ultimate favorable result may be obtained, provided the knife is resorted to freely and frequently. And further, that the prognosis in fact of the tuberculous process in the neighborhood of the ear is fully as favorable in infants, if not more so, as the prognosis of the ordinary septic process commonly causing mastoid diseases in children.

Of course, combined with the special surgery, such a case needs hygienic surroundings, the best of food and open-air treatment, but as far as my experience goes such open-air treatment will be just as successful in the immediate vicinity of Boston as it will be in Maine or the Adirondacks. The immediate treatment is confined to the use of nourishing food and tonics, but much improvement can be obtained in the middle ear processes by the use of dry treatment and iodoform powder and by the use of iodoform powder and gauze in all the open wounds. These cases are the only ones which, in my experience, show marked improvement by the use of iodoform gauze instead of plain gauze.

298 Marlboro Street.

DISCUSSION.

DR. STERLING RYERSON, Toronto, said that his experience has been disastrous. In some cases under observation, disease in the middle ear has been the primary or initial symptom in connection with tuberculosis, and in other cases there has been manifested the ordinary pulmonary tuberculosis followed by a condition in the middle ear. He thinks that all the textbooks say that tuberculosis of the middle ear is a rare disease. He read an article in the *Annals of Otology* in which it is stated that out of 100 cases of discharge from the middle ear 64 had the tubercle bacillus. Very few physicians in practice investigate the discharge from the middle ear, and Dr. Ryerson would not be surprised if the condition were found to be much more frequent than is generally supposed.

DR. G. P. POND, San Francisco, agreed with Dr. Crockett regarding the importance of the fresh-air treatment. The sooner physicians realize that it is not so much the Adirondacks or Maine or southern California, as good food, fresh air and satisfaction with their surroundings that benefits patients, the sooner they will get to the successful treatment of such cases, not only tuberculosis of the ear, but tuberculosis of other parts as well.

DR. CULLEN F. WELTY, San Francisco, stated that he had seen several double perforations and they have always been associated with tuberculosis of the lung. He thinks that every one of these patients ought to be operated on. Practically the only thing that can be done is operation, and the sooner this is done the better the chance for complete recovery. He repeated Politzer's statement: "If you find incipient tuberculosis in a patient who has acute otitis which lasts for more than six weeks, he should be operated on at once."

DR. F. L. JACK, Boston, said that he did not understand that Dr. Crockett laid any great stress on the importance of removing infected glands in the neck, and asked what his experience has been, whether if not removed they have subsided or disappeared in favorable cases. Dr. Jack also asked if he explains why the gland in front of the tragus is affected? It is about one of the first symptoms of this disease, almost before there is evidence of middle-ear trouble.

DR. E. A. CROCKETT, Boston, said that he thinks removal of the infected glands in the neck absolutely essential, but that it is more important to attend to the ear portion of the operation first. For instance, in the last case, many operations had been performed on the child's neck, without the ear being touched, and after each child nearly died. At the time he removed the sequestra there were a half dozen glands on the side of the neck. Two months after the operation they had disappeared. Many glands will do that if the original focus is removed, and those that do not should be promptly operated on. Dr. Crockett believes operation should be pushed to the limit of the child's strength, otherwise one can not deal with the disease. So far as open-air treatment goes, it has been successful in the cases he has observed. In the case of a baby that only weighed ten pounds, with a daily temperature of 102, he found no difficulty in having it sleep out of doors on a covered porch last winter. He thinks that if a child is

well protected from a direct draft and put in a fur sleeping rug there will be no difficulty even with an infant that is in poor condition. This child's nurse slept out also, to take care of it, and she received almost as much benefit from the open-air treatment as the child did.

PLEURITIC EXUDATES IN CHILDREN.*

MELINDA KNAPHEIDE-GERMANN, M.D.
Gynecologist to Blessing Hospital.
QUINCY, ILL.

I do not find the literature on this subject very extensive. While attending lectures in Paris I observed many interesting cases in the "Hôpitaux Des Enfants Trouvés," which I had the privilege of visiting daily for a month in company with the physician in charge. Since then it has been my fortune to encounter a number of cases in my own practice. Last winter, especially, pleurisy seemed very prevalent, accompanying as well as following the different forms of acute pneumonia. We seldom find pleurisy a primary disease. In my experience effusions of the right side predominate over the left. Pleuritic exudate, either serous or purulent, is common in infancy and childhood; more particularly the latter, especially before the fifth year of life. As the chest wall at this age is more resilient than in the adult, large exudates are better borne, producing fewer pressure symptoms.

ETIOLOGY.

The etiology is at times obscure, the majority of cases being attributed to the different inflammatory processes of the lung. In some, however, there is no other exciting cause than an exposure to cold and dampness, which, by reducing the constitutional power of resistance, establishes avenues of infection.

Under ordinary conditions the pleural cavity represents an enormous lymph sac, containing only a small amount of fluid, which escapes from the blood vessels and is carried off by the lymphatics. In pleural inflammation the lymphatics are not able to carry off the excess of fluid, and it accumulates. This may be first serous in nature, later becoming purulent.

Bacteriologic examinations of the fluid, whether serous or purulent, often show an absence of micro-organisms. Again, as stated by Netter, we may recognize three groups of acute or subacute pleurisy, caused by the tubercle bacillus, the pneumococcus and the streptococcus. The tubercle bacillus is at times difficult to find. Pneumococcus pleurisy is often secondary to inflammatory processes of the lung. It may, however, be primary. The exudate is usually purulent, but the prognosis is very favorable. Streptococcus pleurisy is the typical septic form, which may occur either from direct infection of the pleura through the lung in bronchopneumonia, or in cases of streptococcus pneumonia. It may also follow infection of more distant parts. This is the most serious and fatal of all forms. Here, too, the fluid is purulent.

SYMPTOMS.

Pleurisy with effusion is often very acute in its onset. The symptoms resemble pneumonia, and in many cases a pulmonary process is co-existent, the symptoms of the one being masked by the other. A high temperature is present, increased respiration, rapid pulse and pain, which in young children is referred to the abdomen. In infants convulsions are often among the initiatory symptoms. Dyspnea is at times very marked, the dilated nostrils and the drawing inward of the infrasternal region show a decided disturbance of the respiratory function. The babe will favor the affected side by lying on it. The white blood count is rarely increased except during the febrile stages. These early symptoms are followed in a few days by the lessening of pain and the temperature having a decided morning remission.

PHYSICAL SIGNS.

The physical signs of fluid in the pleural cavity in children differ somewhat from those in adults. Inspection shows a lack of movement of the affected side on inspiration, which is apparent in even very young children. If the fluid is large in amount there is in addition to the impaired motion a bulging of the affected side. The individual intercostal spaces do not always bulge. On the contrary, the chest may be full of fluid and a retraction of the spaces exists which increases on inspiration. In left-sided exudates the displacement of the heart is more marked, the impulse being seen in the third and fourth right intercostal spaces, sometimes as far out as the right mammillary line. The heart is not so much displaced in effusions of the right side, the impulse being seen in the fourth interspace between the left mammillary and mid-axillary lines. The liver and spleen are at times displaced downward, resembling an enlargement of the organs. This, however, is not so marked in the child as in the adult.

PALPATION.

By palpation we find complete absence of vocal fremitus in older children, while in infants the cry fremitus is lacking, although it may persist with large exudates if there are conducting bands of adhesion between the lung and chest wall.

PERCUSSION.

The percussion note shows marked variations from slight dulness to absolute flatness, according to the amount of fluid present. Great skill must be exercised in percussing the chest of a child, owing to its elasticity. A layer of fluid may exist between the lung and the chest walls, in which case skillful percussion will reveal dulness, while more forcible percussion brings out the pulmonary note of the underlying lung. When the exudate is small in amount, the dulness is first detected in the back, its upper limit being higher than in front. When the patient assumes the upright position, it has the letter S curve, beginning at the vertebral column, extending upward from the spine diagonally across the back and reaching its highest point in the axillary region, then descending rather abruptly toward the front to a point a little below the sternum. Changing the position of the child will reveal movable dullness when fluid is present. Pulmonary resonance will be heard above the line of effusion, while below there will be dulness varying to flatness, depending on the thickness of the layer of fluid between the lung and the percussing finger. The resistance to the percussing finger is peculiarly wooden in character. On the unaffected side resonance is increased, often becoming tympanitic.

AUSCULTATION.

Auscultation may reveal an absence of breath sounds or distant tubular breathing. Bronchophony is increased and is at times very pronounced. Moist râles and friction sounds are often heard, which are probably transmitted from points above the level of the fluid.

* Read in the Section on Diseases of Children of the American Medical Association, at the Fifty-seventh Annual Session, June, 1906.

DIAGNOSIS.

The classic signs of fluid in the pleural cavity are flatness on percussion, absence of vocal fremitus and absence of respiratory sounds. Dr. Louis Faugéres Bishop of New York, in a paper on diagnosis and treatment of fluid in the pleural cavities, says that the fact that so much is dependent on the absence of sounds makes the diagnosis difficult, for it is well known that it is next to impossible to persuade some patients to breathe properly.

PROGNOSIS.

Prognosis in serous pleurisies is good at this age, unless we find some of the virulent micro-organisms present. Serous exudates are of especial interest when they contain such pus organisms as the pneumococci. The difference between purely serous pleurisy and pyothorax is simply a matter of degree; at times the upper layers of an exudate are serous and the lower purulent. In cases of this kind we apprehend severe symptoms. If the pleuritic exudate occurs on both sides the prognosis becomes grave. When effusion is extensive, compressing the lungs and displacing important viscera as the heart, there is danger of asphyxia. When the fluid is not readily absorbed and likely to become purulent, the prognosis is more unfavorable on account of the prolonged pressure on the lung, with its corresponding ill effects on the general condition of the child.

TREATMENT.

The treatment of serous exudate will vary according to the amount present. If there is no displacement of important viscera and little disturbance in the respiratory function, as well as in the circulation, an expectant treatment is all that is required. If, however, the exudate is large and absorption is delayed, the chest should be aspirated. The physical signs should guide us where to aspirate, but usually the point of aspiration is in the fourth or fifth interspace in the mid-axillary or posterior axillary line. It is well to make a bacteriologic examination of the fluid to determine which form of organism, if any, is present. If one of the more benign forms is found, no further treatment will be necessary, unless there be a re-accumulation, when a second aspiration must be resorted to. If, however, we find streptococci there is danger of the fluid becoming purulent and requiring treatment.

EMPYEMA.

When a pleural exudate has become purulent it is spoken of as an empyema. This condition is more common in the first three or four years of life than a serous effusion. It is caused by the invasion of the pleura by pus-producing organisms. Empyema does not present its characteristic signs at first, but develops in most cases from a serous effusion. We find several intervening stages between the serous and the purulent exudates. The pathologic and bacteriologic causes vary, depending on the micro-organisms present. In cases of streptococcus infections the inflammation may be purulent at the start. Primary empyema may occur through an injury to the pleura from without, the infection taking place through the wound. In cases in which we find no evidence of disease in the neighboring organs the pleura has been secondarily involved by some virus in the blood or lymphatics.

SYMPTOMS.

We find the same pressure symptoms in empyema as in serous effusion, but in addition those produced by pus, as fever which may be high and often associated with chills. The fever assumes the septic type, cachexia, anemia and prostration soon becoming very prominent. Leucocytosis is very pronounced, being the most important symptom in the differential diagnosis from a purely serous exudation. The latter condition shows a scarcity of leucocytes.

DIAGNOSIS.

The diagnosis of empyema depends on the signs of fluid in the pleural cavity, also on the number of leucocytes present; but a diagnosis can not be made definitely without the use of an aspirator. In all cases the aspirator should be freely used. One of the greatest sources of error is the practice of resting content with a single negative puncture. The consequences of neglected empyemas are often serious.

I mention a few lesions with which empyemas may be confounded: Acute unresolved pneumonia. The frequency of bronchial breathing, vocal resonance and normal tactile resonance over a pleural exudate which is frequently present makes a diagnosis difficult. Aspiration alone will clear the diagnosis, often several punctures being necessary. 2. Serofibrinous exudates.—In serofibrinous exudates a diagnosis distinguishing it from the purulent form is difficult. Pronounced leucocytosis favors empyema; however, it will be safest to use the aspirator as guide. Aspiration may at times be necessary to diagnose a case from chronic adhesive pleurisy. 3. Atelectasis.—An occlusion of the bronchi in children may be caused by a simple bronchitis. The symptoms of this condition may closely resemble those of empyema; here, again, it will be necessary to resort to aspiration.

PROGNOSIS.

Recovery without surgical interference very seldom takes place, the patient succumbing to prolonged suppuration. In infants under one year mortality is highest. Pus when present should be removed at once, since the longer it remains the more it endangers the function of the lung whose expanding power is more or less impaired. The patient also loses strength rapidly from the fever due to suppuration and absorption of toxic material.

TREATMENT.

The fundamental rule in treating empyema is to consider it an abscess, removing the pus as early and thoroughly as possible, and securing ample drainage as long as the secretions persist. The fever subsides almost immediately and the condition of the patient improves at once. The method of procedure varies. Aspiration may at times give permanent relief, but often it fails. There is some difference of opinion as to whether it is better simply to incise an intercostal space or, in addition, to remove a portion of one or more ribs. I am in favor of the latter, as the indications are twofold, first, to make an opening large enough to permit of the insertion of one or two fingers to break up any adhesions which may be present, and, second, to permit thorough drainage. In favorable cases of empyema operated on early, the lungs expand in a normal way within a very few days.

I might mention the puncture method with hydraulic drainage of Bülau. Here a permanent outflow of pus is established, negative pressure being produced in the chest by suction on the fluid which thus favors expansion of the lung. The advantages claimed for this method are that the operation may be performed easily

and without anesthesia and through a very small opening. The idea is good, but the results have been favorable in only a few cases, its effectiveness being uncertain. When the expansive power of the lung is deficient it is impossible to remove all the pus, since it drains off in quantities corresponding to the space which can be filled with expanding lung tissue. Then, too, the drainage tube may become clogged with coagula, thus interfering with the success of the operation and necessitating a resection of the rib.

THORACOTOMY.

The technic of thoracotomy with resection of one or more ribs, according to Joseph D. Bryant, is as follows: After taking thorough antiseptic precautions, employing local or general anesthesia as the condition of the patient requires, select the sixth or seventh rib and make an incision in the axillary line about two or three inches in length down on the middle of the rib in the long axis. Through the periosteum bisect the primary incision at the center with a horizontal one the width of the rib, raising from the bone on both surfaces, with a periosteotome, the periosteum together with the surrounding tissues, being careful not to open into the pleural cavity. Exsect an inch or an inch and a half of the bone, dividing it with a saw or rib forceps, arrest the hemorrhage and then make a suitable opening through the intervening structures into the pleural cavity, permitting the fluid to escape. Division of the intercostal vessels should be avoided. Irrigation is dangerous and ought to be used very cautiously. Normal salt solution or Thiersch solution is best used for cleansing the wound. One or two drainage tubes should be inserted, just reaching the pleural cavity, and should be fastened so that they can not escape within. Antiseptic dressings should now be applied and changed as often as indicated by the amount of discharge.

As the discharges decrease in amount the lungs expand and the abscess cavity diminishes; the tubes may gradually be removed, the patient completing recovery in from two to six weeks.

CASE SUMMARIES.

CASE 1.—A child, about 2 years old, was taken ill suddenly last winter. Vomiting, a high temperature, and evidently severe pain in the right side of the chest were the first symptoms. The temperature ranged from 104 to 107. A diagnosis was made for lobar pneumonia. At the end of a week the temperature dropped suddenly, but this was only for one or two days, when it again ascended, differing from the temperature at first in that it now had the morning remission ranging from 99.6 in the morning to 105.5 in the afternoon. There being considerable dulness present, after waiting a few more days I decided to aspirate, removing but a small quantity of a serous fluid, sufficient, however, to assist resorption, for the child began to improve at once, making complete recovery without further surgical interference.

CASE 2.—A child about 4 years old was taken with the usual symptoms of pneumonia, viz., fever, pain, cough and dyspnea. After the usual time, although the temperature was lower and the pain less, dyspnea increased and convalescence was not established. The temperature now assuming the septic type, on aspiration I found pus, and thoracotomy with resection of two ribs was performed by Dr. Knapheide and myself, when more than one pint of purulent fluid was evacuated. The usual antiseptic dressings were applied. The patient made a splendid recovery in about four weeks.

CASE 3.—A boy about 5 years old a few years ago had empyema. I wished to aspirate. After sterilizing the field, I cautioned the little fellow to remain quiet while inserting the needle. He promised, but just as the needle had entered the intercostal space he moved suddenly, causing the needle to break. The parents had objected seriously to an operation previous to this, but now two indications for operation confronted me, viz., to find the needle and to find the pus. The parents consented to search for the needle; fortunately we found both, but the pus first. I performed thoracotomy, resecting a portion of two ribs. The boy made a good recovery.

CASE 4.—A baby less than a year old was taken suddenly last winter with a high temperature and severe pain in the right side of the chest, moaning with every inspiration. Respirations were rapid and labored. The little fellow insisted on lying on the affected side. Inspection, percussion and auscultation revealed pneumonia. The temperature ran continuously high, ranging from 104 to 106, at the end of a week. It dropped suddenly and was practically normal for about two days, when it again climbed. It then assumed the remittent type, low in the morning and highest about 4 p. m., the temperature not being the same every day. This continued for about a week, when I decided to aspirate. Pus was found, and he was taken to Blessing Hospital, where thoracotomy with resection of one rib was performed. The little fellow rallied from the operation and did well for three days, when the temperature ascended again, profuse diarrhea set in and he succumbed.

DISCUSSION.

DR. JOHN LOVETT MORSE, Boston, disagreed with Dr. Germann on several points. In the first place a serous pleurisy is extremely rare in infancy. There have been but two cases in the Infants' Hospital in the last ten years. Serous pleurisy almost never has an acute onset in childhood; dry pleurisy does. Fluid not infrequently causes only slight dulness, while at times, especially on the left side, there is no dulness, but tympany, even when the pleura is full of fluid. Several points in the differential diagnosis between solid lung and fluid in the pleura were not brought out. The point of greatest importance is a sense of marked resistance on the affected side. In pneumonia there is a certain amount of resistance, but never marked. When there is fluid there is a marked sense of resistance. Next in importance is the presence or absence of displacement of the heart and next the presence or absence of tympany in Traube's space, when the effusion is on the left side. The presence or absence of fremitus is of some importance. The amount and character of the respiration and voice sounds are of comparatively little importance and as a rule can be disregarded. He was glad that Dr. Germann emphasized the importance of early operation. Nothing makes so much difference in the prognosis of empyema as the time at which the operation is done, not only on account of the importance of avoiding marked compression of the lung, but also on account of dangers of sepsis from continued absorption. It is perfectly possible to have a normal temperature in empyema. It should be remembered, therefore, that empyema cannot be ruled out because the temperature is not elevated.

DR. T. W. KILMER, New York City, recalled the teaching of Dr. Holt in pleurisy with effusion, that in the presence of bronchial breathing over a very large area of lung there is fluid in nine cases out of ten, which he regards as one of the most valuable signs in the diagnosis of pleurisy with effusion. Dr. Kilmer has never been able to locate satisfactorily the apex beat except by the use of the stethoscope in the examination of infants. In his hospital service in New York pleurisy with effusion has been treated by rest, exclusion of liquids, and giving gr. 5 to 15 of sodium salicylate during the day. They endeavor to have the children absorb their own fluids.

DR. THOMAS S. SOUTHWORTH, New York City, said that as many of these children are in a rather precarious condition when brought for treatment, and inasmuch as an incision through the skin and pleura can be made very rapidly and the tubes introduced quickly, without causing much pain, incision is often much the simplest and safest procedure. Occasionally in cases in which the lung has long been bound down he does resection. When the infection is a pure pneumococcus infection which yields more rapidly than a mixed infection, the simple incision is sufficient in the larger number of cases in infants.

DR. WILLIAM J. BUTLER, Chicago, said that concerning the differential diagnosis of pneumonia and pleurisy, Dr. Morse

raised a point of much importance, that of resistance to percussion over areas of fluid compared with the far less resistance common to pneumonia. Tympany over fluids is something he had not had opportunity to observe, at least, in cases in which effusion of any amount existed. He could conceive that that is possible when the effusion is so slight as to be completely obscured by the resonance of the lung and hollow abdominal viscera. He does not think difficulty in differential diagnosis between pleurisy and pneumonia so frequently arises as does that of the character of the fluid in pleurisy, and, as Dr. Morse says, it is almost always purulent in very young infants. It is always desirable to determine the character of the fluid which is present and this can only be done with certainty by the needle.

DR. JOHN LOVETT MORSE, Boston, did not agree with Dr. Kilmer's treatment of pleurisy by restriction of liquids and attempted absorption, because he thinks the main object of treatment must be to keep up the nutrition. This cannot be done if the amount of fluid is restricted. He thinks it wiser to feed the children entirely with regard to their nutrition, and to draw out the fluid if necessary. He thoroughly approves of resection of the rib, and not of incision, which does not seem to be a satisfactory operation. Resection takes very little longer and causes but little, if any, more shock.

DR. T. W. KILMER, New York City, said his reference was to children of from four to six years of age, in whom it is an advantage to have them absorb their own fluids. He believes the nutrition element is a very important factor, but in the New York hospitals many patients of this age are treated with much more benefit by restricting the amount of fluid than by allowing a child to drink all the water desired.

DR. MELINDA K. GERMANN, Quincy, Ill., regretted that she could not coincide with the statement that there is no such thing as serous pleurisy in children. She recalled a number of cases in which she had aspirated and withdrawn a serous fluid from the chest. In empyema she had never seen a case in which there was not temperature. She had used salicylate of soda treatment with good results. She did not advocate simple incision, unless the strength of the child does not permit resection. Too much stress cannot be placed on the careful examination of young children. Conclusions can be drawn only from objective symptoms, because they have not the aid of speech to make known their sufferings.

Clinical Notes

REPORT OF CASES OF UTERINE FIBROIDS ASSOCIATED WITH GALLSTONES.

ALBERT VANDER VEER, M.D.
ALBANY, N. Y.

With the desire of impressing on the profession at large the importance of studying carefully all complications that may be present in a case of uterine fibroid, I report the following cases in four of which the history of biliary colic was pronounced, but in the others not so distinct.

For a number of years I have gradually become convinced, and am now fixed in my belief, which experience has confirmed, that, when opening the abdominal cavity for any operation, unless the patient is so weak that it is unsafe to make further examination, or to operate, the appendix should be thoroughly explored, and though there may have been no history of appendiceal trouble, still, if this structure is anatomically incorrect, or, if normal in position, has given the history of any previous attacks, I make it a rule to remove it.

As time passes, I am yet more strongly impressed with the belief that this rule is a good one, saving the patient possible further operative intervention.

For about eight years I have convinced myself that it is also good surgery to examine the gall bladder, and, if gallstones be present, to remove them. I feel disposed to insist on this, except, when, as before stated, the patients condition is so feeble that the risk is too great.

I am not aware that there is any pathologic relation between the gall bladder and pelvic troubles, or associated with uterine myomata, but the cases I have seen have been so pronounced that it has seemed proper to place them on record. When we consider these cases they certainly present some strikingly illustrative points regarding the thoroughness with which we should do our abdominal work. The performance of the operation of cholecystotomy is not a prolonged one, and is very easily accomplished. When once the hand of the operator is in the peritoneal cavity the incision can be made very quickly, the gall bladder, if not too contracted, and far back, is easily brought up into the wound and reached in this manner.

It took many years to convince the general practitioner that the surgeon could be of assistance in his abdominal cases and reports of cases of rare complications are yet in order to bring before him more clearly what and how much can be done by the general surgeon in the treatment of lesions, no longer medical, but assuredly surgical. How many operations can be done on one patient at one time is yet a subject for close study by both the medical man and the consulting surgeon.

CASE 1.—Mrs. C., aged 60, entered Albany Hospital, May 2, 1902.

Diagnosis.—Papillomatous ovarian cyst; cholelithiasis.

History.—She gave a family history of a sister and niece having died of sarcoma of the ovaries and mesentery. The patient had been ill for more than a year with gradual enlargement of the abdomen and more or less pain.

Operation.—On opening the abdomen there was an escape of a large amount of yellowish serous fluid. There were cysts connected with each ovary. The right broad ligament was clamped; the left broad ligament was sutured at once; then the appendages with the cystic tumors were removed and a supravaginal hysterectomy was done. An enlarged gland in the mesentery closely attached to the rectum was removed and the walls of the rectum were sutured over. There were extensive adhesions to the wall of the bladder and to the anterior wall of the uterus. In removing the latter a large portion of the posterior wall of the bladder was included. This opening in the bladder was closed with silk sutures. Hemorrhage was controlled. The gall bladder was found to contain many gallstones—over 100, and the usual cholecystotomy was done. The appendix was also removed. The wounds were closed with silkworm gut; a glass drainage tube was introduced into the bottom of pelvis and also into the gall bladder.

The patient bore the anesthetic very well. Drainage from peritoneal cavity subsided quickly and the gall bladder closed in about two weeks. She left the hospital in good condition June 8, 1902.

Pathologic Report from the Laboratory.—Multilocular ovarian cyst with secondary papillomatous and carcinomatous degeneration.

Subsequent History.—The patient did well for a time, then the old symptoms returned with increased severity, and on May 25, 1903, I made an incision through the old scar and removed a sarcomatous cyst, somewhat flattened and larger than the fist, from the mesentery. Similar growths in the pelvis were not disturbed. A large amount of ascitic fluid was removed. She was tapped by her family physician at her own home, Sept. 13, 1903, and again October 17, when the doctor wrote me that he had withdrawn over ten quarts of fluid at one time, ill-looking and tinged with blood. After this last tapping careful examination revealed two large growths in right side of abdomen, about the size of the ones I removed at first operation. After these tappings the patient felt weak for a day

or two, then comfortable, with a good appetite, but each time the cyst began to fill again rapidly, and she ultimately died of exhaustion.

CASE 2.—Mrs. H. G., aged 35, entered Albany Hospital Dec. 1, 1902.

Diagnosis.—Cholelithiasis; uterine myoma.

Family History.—Her father and mother both died of valvular disease of the heart, aged 64 and 58 years respectively. A brother died of typhoid fever, aged 31; a sister died at confinement of acute Bright's disease; three sisters are living and well. There was no history of so-called hereditary disease.

Personal History.—This patient has had attacks of biliary colic since childhood, never severe until four years ago, when character changed entirely, growing more severe, and she passed stones. Slight shooting pains were experienced occasionally through the abdomen, low down toward the umbilicus, and when on her feet she experienced a very weak feeling until thoroughly rested.

Operation.—Dec. 3, 1902. On opening abdomen multiple fibroids were found low down in the pelvis and very adherent to the surrounding parts. The ovaries and tubes were cystic, the right tube containing some pus. The right ovary and tube were adherent to wall of peritoneum. There was also a mass, the size of a hen's egg, in which were involved right ovary, fimbriated extremity of tube, appendix and head of cecum. The left side was free from adhesions. The left broad ligament was ligated in the usual manner, the right was clasped with clamp, and the tumor removed as quickly as possible. The right ovary and tube were dissected out of the mass and removed. The cecum was closed over with Lembert sutures, all bleeding points were controlled, a piece of omentum was ligated, and the stump of the pedicle was sewed over. The gall bladder was then explored through the median incision and several gallstones were found. The usual incision for cholecystotomy, 4 c.m. long, was made, using right hand inside of peritoneal cavity as a guide. The gall bladder was brought up into the wound, sutured to the peritoneum and surrounding structures by means of silkworm-gut sutures and several catgut sutures. The gall bladder was aspirated and 4 ounces of bile were drawn off. The gall bladder was incised and 50 stones, the largest the size of a marble, were removed by means of a scoop. A long glass drainage tube was inserted into the gall bladder and packed with iodoform gauze. The patient took the anesthetic well and left the table in good condition.

Postoperative History.—The patient was somewhat slow in convalescing. She was very cholemic and had a train of nerve symptoms marked by decided delusions, yet ultimately made a perfect recovery.

CASE 3.—Mrs. S. W., aged 37, entered Albany Hospital January 8, 1903.

Diagnosis.—Pregnancy, gallstones, bicornate uterus.

Family History.—This was negative save that maternal grandmother died, aged 80, of cancer.

Personal History.—In the fall of 1892 she began to feel increased distress about the pelvis, and while regular in her menstruation yet noticed enlargement in the right side of abdomen. It was thought she might be suffering from extrauterine pregnancy. She had had several marked hemorrhages. Menstruation was regular, and an exploration was advised, a positive diagnosis of gallstones also having been made.

Operation.—On Jan. 12, 1903, I did a dilatation, curettement, supravaginal hysterectomy and cholecystotomy. On vaginal examination the left side of the cervix was found badly lacerated and the usual repair was done. A very distinct mass could be felt on the right side. A sound passed well up in the left cornu of uterus, but could not be introduced readily on the right side. The patient was then placed in Trendelenburg position and usual median incision was made. Careful examination now disclosed a double uterus, the right containing a fetus of possibly two months' pregnancy. She had previously been curetted, had cervix repaired in another hospital and had had some pelvic peritonitis following. Both sides of the uterus were carefully freed from adhesions. The right ovary and tube were enlarged, with evidence of pyosalpinx present. It was decided to do a supravaginal hysterectomy, after consultation with her husband, and also to remove the appendix. On examination of the gall bladder it was found to contain a number of gallstones, and the usual cholecystotomy was done. A number of stones were removed and the patient made a good recovery from both operations.

CASE 4.—Mrs. L. R., aged 30, entered Albany Hospital May 5, 1904.

Diagnosis.—Dermoid cyst of ovary, associated with gallstones.

Family History.—Negative.

Personal History.—There was pain in the right hypochondriac region, severe at times and associated with vomiting.

Operation.—An incision 4 in. long was made in the median line between the umbilicus and the symphysis. A left ovarian cyst was found and removed in the usual manner; appendectomy was also performed.

The median incision revealed the gall bladder bound to the liver by numerous adhesions. The field of operation was walled off by tampons. On opening the gall bladder there was an escape of mucopurulent material. The gall bladder was mopped out, four stones were removed, the bladder was stitched to the abdominal wound and a glass drainage tube was inserted in the gall bladder, with iodoform gauze packing. This sinus continued and did not close under any line of treatment.

Second Operation.—June 21, 1904, a second operation, anastomosis between gall bladder and duodenum, was done for closure of sinus. The Murphy button was used. A few Lembert sutures were placed around the button to prevent leakage. There was slight soiling of the peritoneum. A glass drainage tube was used.

The patient made an excellent recovery, has since given birth to a healthy child and is in good condition.

CASE 5.—Mrs. E. P., aged 38.

History.—Family and past history were negative. For the past two months the patient has suffered considerably with pain in the right side, associated with irregular menstruation. The bowels were constipated; there were no attacks of colic. Micturition was frequent and painful.

Operation.—On Nov. 21, 1903, I did a curettage and ligated hemorrhoids. I also did a suprapubic hysterectomy for fibroid, appendectomy for chronic appendicitis and cholecystotomy for removal of a number of gallstones. Recovery.

CASE 6.—Mrs. C. G. Family history negative.

Operation.—On June 2, 1903, I did a left salpingo-oöphorectomy and cholecystotomy, with removal of three large gallstones. The patient recovered nicely.

I have cited these few cases from some which have occurred in my practice to illustrate the difficulty we believe at one time existed, in operating on the gall bladder and like organs, while operating on the pelvis. But while one needs to study carefully regarding the endurance of the patient, yet when the peritoneal cavity is opened, careful examination of these suspected organs should be made and operative intervention resorted to, if gall stones are present. This is in contradiction of many of our beliefs in the past.

28 Eagle Street.

A SIMPLE CONTRIVANCE FOR THE RELIEF OF HAY FEVER.

A. C. HEATH, M.D.
ST. PAUL, MINN.

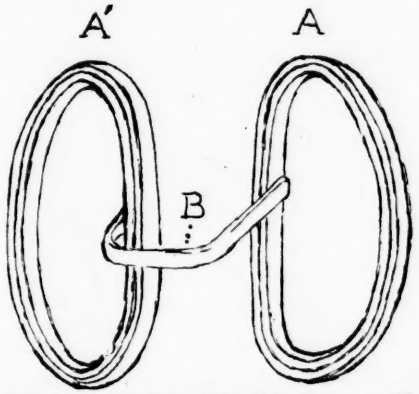
During the hay-fever season of 1905, I experimented very carefully on a number of hay-fever patients, trying to prove undeniably that the atmosphere at this time is laden with some irritating substance which could be removed from the air by filtration or some similar process. The mode of investigation consisted in the use of an ordinary chemical laboratory water bottle. This bottle was fitted with two glass tubes, to one of which was attached rubber tubing. The water bottle was half filled

with water, then the glass tubes were so arranged that when suction was applied through the rubber tubing the atmosphere so breathed came through the water in this bottle. This apparatus worked on the principle of the Turkish pipe or water pipe. By this means, it was hoped to remove from the air, when it passed through the water, any material which might be suspended in it.

With this apparatus it was necessary for the patient to inspire carefully through the nose and to expire through the mouth. The success of this method was demonstrated in two people who were so sensitive to golden rod that they were thrown into paroxysms of sneezing and coughing when near it, when they inspired air through the water bottle, although the air was taken from the midst of a bunch of golden rod, in a few minutes they were comfortable and the irritation seemed to cease.

This year I have made a small appliance, shown in the accompanying illustration, which fits in the nostril, the purpose being, so to speak, to filter the air as much as possible without interfering with respiration.

This appliance consists of two rings connected by a small band. Over these rings is stretched fine grass linen or chiffon (silk). It was found that to get the best results this material must have a fine mesh (one hundred or more threads to the inch). These two rings are



A', two rings or hoops, one within the other, on which the cloth or filter is stretched for right nostril. A, the same for left nostril. B, small connecting nose-piece or bridge to be used as a handle when inserting or removing rings.

placed one in and across each nostril, perhaps a half an inch from the external opening and so placed that all air respired must pass through the grass linen, chiffon, or whatever fabric may be used. They do not interfere with respiration and can be worn very comfortably. One man wore his continually for twenty-four hours, at business and during sleep. These rings were used in a number of severe cases and in every one relief was apparent in from fifteen minutes to an hour.

Sometimes the appliance was difficult to use if the patient began when his nose was so blocked that he could not breathe through it at all; if, in such a case, however, the patient will persist until he can establish nasal respiration to a sufficient degree the nasal irritation passes away very rapidly.

Most of the patients on whom I have tried this appliance are people who under my direction have used Dunbar's pollantin and the active principle of suprarenal glands with little success. I firmly believe that this sort of an appliance will give the hay-fever patient great relief. These sufferers, especially those who have hay asthma, get considerable relief at night by putting a wet handkerchief over their faces and trying to breathe through it. This fact suggested to me the possibilities of the above described contrivance.

I have made the rings which hold the filtering fabric sometimes of cork and hard rubber, but usually of German silver. It is not necessary to have the two rings connected by a bridge except that in this way it makes it easier for the patient to insert and to remove the rings. When the appliance is made in this way and is in position there is a small band or wire passing across the septum where the septum joins the upper lip. This is hardly noticeable.

The rings are so made that fresh grass linen or chiffon can be applied whenever desired, this fabric being put on the rings in the same way that linen or cloth is put on the embroidery hoops used by women in their fancy work.

This filtering fabric, when in use, soon becomes moistened by the secretions of the nose, but this adds much to the filtering power of the appliance; the moisture aiding the filter in holding back any pollen or substance suspended in the inspired air.

SUCCESSFUL DELIVERY OF TWINS IN PLACENTA PRÆVIA.

E. L. DEWEY, M.D.
WHITING, IND.

History.—Mrs. M., aged 34, multipara, eight months pregnant; was well during this pregnancy until labor pains set in Aug. 27, 1906. She arose and prepared breakfast as usual. Labor pains set in with profuse bleeding about one hour after getting up.

Examination.—I saw her about thirty minutes after the onset of the hemorrhage. Pallor and weakness were marked. Pulse was 112. Abdominal palpation gave evidence of twin pregnancy. One fetus was in the L.O.A., the other in the L.O.T., at the fundus, face downward. The fetal heart sounds were plainly audible on auscultation. Vaginal examination showed profuse hemorrhage; the os was soft and admitted three fingers. The occiput was presenting. The margin of the placenta overlapped the os, and was posterior.

Diagnosis.—Placenta prævia, complicating twin pregnancy.

Treatment.—I decided to operate at once and sent for assistants; in the meantime I tamponed the vagina with sterile gauze and gave a hypodermic injection of morphin sulphate, ¼ grain.

Operation.—Under chloroform anesthesia, and with strict aseptic precautions, I dilated manually, ruptured the membranes, performed version and rapidly extracted infant number one; the other infant was delivered in like manner. I gave them to assistants to resuscitate; this was accomplished after twenty minutes.

There was one placenta, which I removed manually. Time consumed from the beginning of the anesthetic until the operation was completed, ten minutes.

The patient made a good recovery.

The infants were both males, weighing about five pounds each, and are strong and healthy.

REMARKS.

It seemed to me that this was a case in which active interference was imperatively required without delay. The patient had lost an enormous amount of blood, and was in an anemic and exhausted condition. Labor had set in and it would have been impossible, by expectant treatment, to prevent further hemorrhage.

The infants were living and would certainly have perished if the hemorrhage had continued or if the labor had been prolonged.

The vagina and pelvis were large and roomy. The os was soft and easily dilated. These points were the indications for operation in this case. Cervical lacerations were slight and did not need repair.

New and Non-Official Remedies

THE FOLLOWING ARTICLES HAVE BEEN TENTATIVELY ACCEPTED BY THE COUNCIL ON PHARMACY AND CHEMISTRY OF THE AMERICAN MEDICAL ASSOCIATION FOR INCLUSION IN THE PROPOSED ANNUAL, "NEW AND NON-OFFICIAL REMEDIES." THEIR ACCEPTANCE HAS BEEN BASED LARGELY ON EVIDENCE SUPPLIED BY THE MANUFACTURER OR HIS AGENT, BUT TO SOME EXTENT ON INVESTIGATION MADE BY OR UNDER THE DIRECTION OF THE COUNCIL. CRITICISMS AND CORRECTIONS ARE ASKED FOR TO AID IN THE REVISION OF THE MATTER BEFORE FINAL ACCEPTANCE AND PUBLICATION IN BOOK FORM.

THE COUNCIL DESIRES PHYSICIANS TO UNDERSTAND THAT THE ACCEPTANCE OF AN ARTICLE DOES NOT NECESSARILY MEAN A RECOMMENDATION, BUT THAT SO FAR AS KNOWN IT COMPLIES WITH THE RULES ADOPTED BY THE COUNCIL.

W. A. PUCKNER, SECRETARY.

(*Continued from page 1195.*)

GUAIAMAR.

GUAIACOLGLYCERYLESTER.

Guaiamar, $C_6H_4.OCH_3.O(CH_2OH.CHOH.CH_2)$,1:2, $= C_{10}H_{14}O_4$, is the monoguaiacol ester of glycerin.

It is prepared by the reaction of two molecules of sodium hydroxide, one of guaiacol and two of monochlorhydrin at from 140° to 150° C. (284° to 302° F.). When the alkaline reaction has disappeared, the mass is diluted with water which leaves the greater part of the glycerin ester undissolved. The portion dissolved in the water solution may be extracted from the latter by ether.

It is a white, crystalline, non-hygroscopic powder, melting at 75° C. (167° F.) and having a bitter, aromatic taste. It is soluble in 20 parts of water at the ordinary temperature, but dissolves best in warm water; it is soluble in alcohol, chloroform, ether and glycerin. Its solutions are neutral to test paper. It is decomposed by soluble hydroxides and carbonates and by strong acids.

Actions and Uses.—The chief value of guaiamar arises from the liberation of guaiacol, partly in the stomach and partly in the intestinal canal, being split up by the gastric and intestinal contents with the assimilation of one molecule of water into guaiacol and glycerin. By this evolution of guaiacol it is believed to exert a useful antiseptic action in the intestinal canal. Moreover, it is asserted that it is absorbed by the skin as readily as by the alimentary canal and that it is without effect on the sound tissue, but becomes effective at the location of the diseased part. It is said not to interfere with the normal process of digestion, but, on the contrary, to be followed by decided tonic action.

It is recommended as a substitute for guaiacol in all cases where the latter is indicated. In the form of ointment it has been recommended in acute articular rheumatism.

Dosage.—0.3 to 1.3 Gm. (5 to 20 grains) in capsules or dissolved in warm water. Locally, in the form of 25 per cent. ointment with wool fat (lanolin), by itself, or combined with belladonna, zinc or mercurial ointment, etc.

Manufactured by Mallinckroat Chemical Works, St. Louis. U. S. patent No. 599,125.

GUAJASANOL.

DIETHYLGLYCOCOLL-GUAIACOL HYDROCHLORIDE.

Guajasanol, $C_6H_4(OCH_3)(CH_2N(C_2H_5)_2.COO).HCl = C_{13}H_{19}NO_3HCl$, is the hydrochloride of diethylglycocollguaiacol.

It is prepared by the action of chloracetylchloride on guaiacol and decomposition of the product with diethylamine.

It forms small, colorless, prismatic crystals, melting at 183° to 184° C. (361.4° to 363.2° F.), having a slight odor of guaiacol and a bitter saline taste. It is soluble in its own weight of water and in 25 parts of alcohol, but insoluble in ether.

The solution in water should be clear, colorless, and gives a white precipitate with silver nitrate. The oily base separates on the addition of an alkali hydroxide. When incinerated on platinum it leaves no residue.

It is incompatible with alkalies and their carbonates.

Actions and Uses.—It is antiseptic and anesthetic. It is readily absorbed and splits off guaiacol in the organism with marked facility. Its antiseptic power is said to be about equivalent to that of boric acid.

Guajasanol has been recommended for the treatment of tuberculosis, both internally and subcutaneously. It is also recommended as a deodorant and is said to have given good service in putrid cystitis.

Dosage.—1 to 3 Gm. (15 to 45 grains) in wafers; subcutaneously, 3 to 4 Gm. (45 to 60 grains) in 20 per cent. aqueous solution; locally it may be used in from 0.1 to 2 per cent. solutions.

Manufactured by Farbwerke, vorm. Meister, Lucius & Bruening, Hoechst a. M. (Victor Koechl & Co., New York). U. S. patent No. 624,722.

HEDONAL.

METHYLPROPYLCARBINOL URETHANE. PENTAN-2-OL-URETHANE.

Hedonal, $CH_3.CH_2.CH_2.CH(CH_3)O.CO.NH_2 = C_6H_{13}O_2N$, is a urethane differing from ethyl carbamate, U. S. P., in that the ethyl radicle has been replaced by the radicle of methylpropylcarbinol (pentan-2-ol), $CH_3.CH_2.CH_2.CHOH.CH_3$.

It is prepared by heating the secondary methylpropylcarbinol or pentan-2-ol, $CH_3.CH_2.CH_2.CHOH.CH_3$, with urea nitrate under pressure (U. S. patent No. 659,202), also by other methods. (German patents Nos. 120,863, 120,864, 120,865).

It is a white, crystalline powder, having a faint aromatic odor and taste, melting at 74° C. (165.2° F.), and boiling at 215° C. (419° F.). It dissolves in 120 parts of water at 37° C. (98.6° F.), but is more soluble at higher temperatures and is readily soluble in alcohol, ether, chloroform and other organic solvents. It is readily volatilized with the vapors of water or alcohol, and when boiled with alkalies is split up into its constituents methylpropylcarbinol, ammonia and carbon dioxide.

On boiling with dilute sodium hydroxide, ammonia is evolved and recognized by the odor and the usual reagents; if then an aqueous solution of iodine in potassium iodide is added, and the mixture allowed to cool, the odor of iodoform derived from the alcohol is distinctly manifested.

It is incompatible with alkalies, their carbonates and bicarbonates.

Actions and Uses.—Hedonal appears to have a greater hypnotic effect than ethyl carbamate. It is said to be followed by no after-effects and is oxidized in the body to urea and carbon dioxide. It is recommended in insomnia due to mental overwork or nervous excitement occurring in the course of neurasthenia or hysteria. It is claimed to be particularly useful preliminary to anesthesia, a hypnotic dose being given and anesthesia effected with chloroform after the patient has been asleep for an hour.

Dosage.—1 to 2 Gm. (15 to 30 grains), administered dry, followed by a swallow of water, or in wafers or capsules.

Manufactured by Farbenfabriken, vorm. Friedr. Bayer & Co., Elberfeld, Germany (Continental Color & Chemical Co., New York). U. S. patent No. 659,202; German patents Nos. 11,496, 120,863, 120,864, 120,865.

HELMITOL.

A name applied to Hexamethylenamine Methylencitrate (which see).

Manufactured by Farbenfabriken, vorm. Friedr. Bayer & Co., Elberfeld, Germany (Continental Color & Chemical Co., New York). U. S. patent. U. S. trademark No. 39,580.

HEMICRANIN.

A mixture of 5 parts of acetphenetidin (phenacetin), 1 part caffeine and 1 part citric or tartaric acid.

Dosage.—0.5 to 1.0 Gm. (8 to 15 grains).

Manufactured by Farbenfabriken, vorm. Friedr. Bayer & Co., Elberfeld, Germany (Continental Color & Chemical Co., New York) U. S. trademark, No. 27,151.

HEMOGALLOL.

Hemogallol is an organic iron compound produced from blood by reduction of its hemoglobin by means of pyrogallol.

Fresh defibrinated blood suitably diluted with water is mixed with an equal volume of a saturated solution of pyrogallol which

causes the precipitation of a voluminous precipitate which is separated, washed with water to remove pyrogallol, and finally with alcohol.

It is a reddish-brown, almost tasteless powder, insoluble in water, alcohol, etc.

It does not show the spectroscopic bands of hemoglobin between D and E.

Actions and Uses.—It is hematinic.

Hemogallol is recommended in anemia, chlorosis, chronic nephritis, diabetes and in convalescence.

Dosage.—0.25 to 0.5 Gm. (4 to 8 grains), one-half hour before meals in powder with sugar or in tablets.

Manufactured by E. Merck, Darmstadt (Merck & Co., New York). U. S. patent No. 541,096.

HEMOQUININE.

COMPOUND ELIXIR OF THE SO-CALLED PEPTONATE OF IRON, MANGANESE AND QUININE WITH ARSENIC, SCHIEFFELIN.

Each 30 Cc. (one fluidounce) is said to contain 2.16 Gm. (34 grains) of so-called peptonate of iron (made by adding ammonio-citrate of iron to freshly preparted peptone of egg albumin) and 0.54 Gm. (8½ grains) of so-called peptonate of manganese together with 0.3 Gm. (5 grains) of quinine peptonate (equivalent to 0.15 Gm. (2.3 grains) of quinine sulphate), and 0.08 Gm. (1/9 grain) of sodium arsenate in a menstruum containing 20 per cent. of alcohol with glycerin and aromatics.

Dosage.—8 Cc. (2 fluidrams) three times a day.

Prepared by Schieffelin & Co., New York. U. S. trademark No. 38,512.

HEROIN.

DIACETYL-MORPHINE.

Heroin, $C_{17}H_{17}(C_2H_3O_2)_2NO = C_{21}H_{23}O_5N$, is a synthetic alkaloid obtained by the acetylization of morphine.

It is prepared by heating morphine with acetylchloride, washing the product with water and dilute solution of sodium carbonate and crystallizing it from alcohol.

It is a white, odorless powder, having a bitter taste, an alkaline reaction and melting at 173° C. (343.4° F.). It is practically insoluble in water or ether, sparingly soluble in cold alcohol, but readily soluble in hot alcohol; it is soluble also in chloroform and in benzene. It forms salts with acids which are soluble in water. On prolonged warming with mineral acids it is saponified, splitting off acetic acid and reforming morphine.

A solution of 1 part of heroin in 100,000 parts of water becomes distinctly turbid on addition of solution of iodine. Its color reactions are similar to those of morphine, with the following exceptions: It does not liberate iodine from iodic acid and does not at once produce a blue coloration with potassium ferricyanide and ferric chloride. No blue color is produced by the addition of ferric chloride to a neutral solution (1 in 100) made by the careful addition of dilute sulphuric acid. Its solutions reduce potassium permanganate.

Action, Uses and Dosage.—See heroin hydrochloride.

Manufactured by Farbenfabriken, vorm. Friedr. Bayer & Co., Elberfeld, Germany (Continental Color & Chemical Co., New York). U. S. trademark.

HEROIN HYDROCHLORIDE.

DIACETYL-MORPHIN HYDROCHLORIDE.

Heroin hydrochloride, $C_{17}H_{17}(C_2H_3O_2)_2NO.HCl$, is prepared by dissolving diacetyl-morphine in dilute hydrochloric acid, concentrating the neutral solution by evaporation and crystallizing.

It is a white, crystalline, odorless powder, having a bitter taste, showing a neutral reaction with congo and melting at 230° to 231° C. (446° to 447.8° F.).

It is soluble in 2 parts of water and soluble also in alcohol, but insoluble in ether.

Its aqueous solutions are precipitated by alkaline hydroxides, the precipitate being soluble in excess of the reagent, and by alkaline carbonates. In other respects the reactions are the same as those given under heroin (which see).

It is incompatible with alkalies and their carbonates, tannic acid and other precipitants of alkaloids. It is decomposed by mineral acids, particularly when heated.

Actions and Uses.—When given in small doses heroin hydrochloride has apparently no effect on any of the vital functions except respiration, which it renders slower, the volume of the individual respirations being increased, but usually not sufficiently to compensate the slowing, the result being a diminution in the total amount of air respired. In large doses it may produce dizziness, nausea and occasionally constipation, and, in poisonous amounts, twitching of the extremities, great exhaustion, and dimness of vision may be added. The temperature becomes subnormal and the pulse rapid and thready. The habit is readily formed and leads to the most deplorable results. It is said not to produce costiveness. (This is not true, according to some observers.) It is readily absorbed from all mucous membranes. It lessens irritability of the respiratory center, thus allaying cough, but does not depress the respiration as much as morphine.

On withdrawing the drug from habitués there is said to be a tendency to respiratory failure which may be dangerous.

Heroin and its hydrochloride are recommended chiefly for the treatment of diseases of the air passages attended with cough, difficult breathing and spasm, such as the different forms of bronchitis, pneumonia, consumption, asthma, whooping cough, laryngitis and certain forms of hay fever. It has also been recommended as an analgesic, in the place of morphine in various painful affections.

Toxic symptoms should be treated by the administration of caffeine hypodermically and of hot coffee by the stomach. To avoid respiratory failure in the treatment of heroin addiction, it has been suggested to substitute morphine for the heroin and then treat the patient for morphine addiction.

Dosage.—0.0025 to 0.005 Gm. (1/24 to 1/12 grain) to adults 3 to 4 times a day, the maximum dose being 0.01 Gm. 1/6 grain. To children it may be given in doses varying from 0.0002 to 0.001 Gm. (1/300 to 1/60 grain), according to the age. Hypodermically it may be administered in the form of a 2 per cent. solution in the same doses. It has been applied locally to the throat, to the uterus on tampons, and by suppository for painful pelvic affections generally, but there is no evidence that it produces any local anesthetic action.

Manufactured by Farbenfabriken, vorm. Friedr. Bayer & Co., Elberfeld, Germany (Continental Color & Chemical Co., New York). U. S. trademark.

HEROMAL.

HEROIN AND HYPOPHOSPHITES IN MALT EXTRACT, SCHIEFFELIN.

Each 8 Cc. (2 fluidrams) is said to contain: Heroin 0.0013 Gm. (1/48 grain), sodium hypophosphite 0.03 Gm. (½ grain) in a menstruum of malt extract with 6 per cent. of alcohol.

Dosage.—8 Cc. (2 fluidrams) every three or four hours.

Prepared by Schieffelin & Co., New York. U. S. trademark No. 37,010.

HEROTERPINE.

ELIXIR OF HEROIN AND TERPIN HYDRATE, SCHIEFFELIN.

Each 8 Cc. (2 fluidrams) is said to contain: Terpin hydrate 0.13 Gm. (2 grains), heroin 0.0026 Gm. (1/24 grain), in a menstruum containing 32 per cent. of alcohol with glycerin and aromatic essential oils.

Dosage.—4 to 12 Cc. (1 to 3 fluidrams).

Prepared by Schieffelin & Co., New York. U. S. trademark No. 36,181.

HETOL.

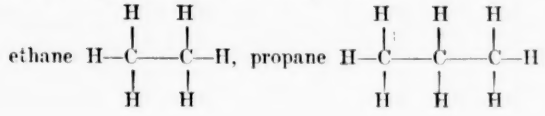
SODIUM CINNAMATE, MERCK.

A name applied to sodium cinnamate (which see) prepared synthetically.

Manufactured by Kalle & Co., Biebrich a. Rh. (Merck & Co., New York).

(To be continued.)

Ane.—Puckner states that this ending denotes a saturated hydrocarbon, i. e., a compound in which the carbon atoms are united by single bonds or valencies, thus:



THE JOURNAL OF THE AMERICAN MEDICAL ASSOCIATION

103 DEARBORN AVENUE . . . . CHICAGO, ILL.

Cable Address . . . "Medic, Chicago"

Subscription price.....Five dollars per annum in advance

[*For other information see second page following reading matter.*]

SATURDAY, OCTOBER 20, 1906.

EPONYMIC DISEASES AND SYMPTOMS IN MEDICINE.

The revolt against the labeling of diseases or symptoms with the name of their discoverers, or those who have brought them prominently before the profession, is a perennial one. Seldom a year passes that editorials on the subject do not appear, and current articles often contain comment on the subject. Needless to say the comment is usually unfavorable to the use of proper names in this manner. Minor,[1] for example, in a recent paper, says, in speaking of the so-called "Kœnig's sign," "It seems to me a regrettable tendency in the literature of our profession to attach to diagnostic methods or symptoms the names of individuals."

As in all questions, so in this one, analysis shows that both advantages and disadvantages may be discerned, according to the point of view. The argument usually advanced against attaching proper names to diseases or symptoms is that they are not descriptive, and that the name of a disease or symptom should give some idea of its nature. It is further argued, and with some plausibility, that, on account of this lack of descriptive quality, it is difficult for students to remember the names of eponymic diseases, and an already complicated subject is rendered still more complicated. The subject is not devoid of its humorous aspects. One almost shudders to think what might have happened if the Smith or the Jones family had been eminent in medical discovery. If it is difficult for the student to remember the difference between Paget's disease and Addison's disease, how much more difficult to recollect how F. X. Smith's disease differs from the affection of his colleague, P. Arthur Smith. It has, indeed, happened that occasionally one observer has had his name attached to two diseases. There are, for example, two Paget's diseases; Paget's disease of the nipple and osteitis deformans.

The use of proper names has of recent years, we think, degenerated in many instances into an abuse. In some instances mistakes have been made in attaching the names of two, or even three, men to a discovery, generally the name of the true discoverer and the name (to use the terms of high finance) of the promoter. The Klebs-Loeffler bacillus, the Heinecke-Mikulicz operation, the Stokes-Adams syndrome, and the Charcot-Marie-Tooth form of muscle atrophy are examples of these hyphenated appellations. It is, of course, sometimes a difficult matter to decide who deserves the most credit, the discoverer or the promoter. The discoverer's description, while leaving no doubt of his discovery, may be vague and meager, couched in somewhat obscure terms, and buried in one of the comparatively mute and superlatively inglorious tenth-class medical journals with which the world is flooded. The promoter may considerably extend our knowledge of the disease, and usually succeeds in dragging it into the limelight of professional publicity. Another objectionable practice of late years has been the naming of modifications of operations. This is certainly carrying the matter too far, especially when the modification is trivial and involves no change in principle. The grotesque and the ridiculous here enter as a possibility. One could imagine reading of Brown's modification of Jones' operation for Morton's disease of the foot. Jones had probably suggested resecting one inch of the head of the fourth metatarsal bone, Brown modifying the operation by suggesting that one inch and an eighth should be removed.

The advantages of attaching proper names to diseases and symptoms are mainly historical and educational. The study of the history of medicine in this country has, of late years, been encouraged to some degree, but it is questionable whether it has been encouraged enough. Question the German student of average intelligence, and you will usually find that he has a fair idea of who the living medical celebrities are and what they have done, and that he knows something about the Germans, at any rate, whose names are attached to diseases and symptoms. Ask an intelligent American medical student who Bigelow was, or where Austin Flint came from, and the chances are that he will not know. What pleasanter way of teaching the history of medicine than as an incidental to the study of the various branches? The anatomist could bring into his branch a good deal of history, for it is full of proper names; Galen, Fallopius, Glisson, Spigelius, Malpighi, Bowman, Bigelow, Gasser and many others could be named. The same is true of physiology, of obstetrics, of surgery and of medicine.

From the historical and sentimental standpoint, then, we believe that the labeling of diseases and symptoms is legitimate, and of distinct advantage, but, at the same time, we can not help seeing that the labeling may be, and often is, done with poor judgment. The use of proper names should be restricted to actually new discoveries; new diseases, new symptoms and signs, or new principles of treatment, and the name should be a corollary of the real, scientific name. The naming of unimportant modifications is bad, and multiple naming is worse. That whole pages of editorials will stop disease naming of this kind we doubt excessively, for the *pruritus publicitati* is as strong in medical men as in other men, but much of the celebrity and credit which comes to the discoverers in medicine is of the postmortem variety.

1. Amer. Jour. Med. Sciences, 1906, vol. lxxxii, p. 523.

POSTMORTEM EXAMINATIONS OF BURNED BODIES.

From time to time physicians are called on to make examinations of dead human bodies that have been burned more or less extensively. The general questions that lead to such examinations may be stated summarily as follows: Is death due to burns or did the burns occur after death from other causes? In the latter case is death due to natural or unnatural—criminal, suicidal or accidental—causes? In many cases burning may have advanced so far that the autopsy can give only negative results so far as many points may be concerned. The first main question—is death due to burns?—may be answered positively by the demonstration of: (1) changes in the skin that safely can be assumed to have been caused by the action of heat on a living body; (2) presence of soot- and coal-particles in the respiratory tract due to aspiration and of diffuse inflammatory and necrotic changes in the pharyngeal and laryngobronchial mucous membrane from the breathing of hot air and gases; (3) presence of carbon oxid in the blood and organs, a condition generally but not necessarily always of vital origin.

The most essential early changes in the skin as the result of reaction to heat are redness and the formation of vesicles and bullæ. Now redness only will be found rarely, because usually the effect of the heat will have been too extensively destructive and, in the second place, such redness fades away rapidly after death. The presence of real blisters, filled with fluid, provided with a red marginal zone, and situated on parts of the integument that are free from edema and marked hypostasis, as a rule means vital changes. The application of heat to the skin after death may cause the formation of small, flabby vesicles with serous contents, but without hyperemia. Hence, under certain circumstances especially, great care must be used as to the interpretation of cutaneous alterations.

Occasionally severe burning, with shrinking and contraction of the parts, may cause breaks in the skin, often provided with smooth margins and not unlike incised wounds; the bottom, however, is formed by the subcutaneous tissue which generally is ragged and burned, and such breaks are to be regarded as of postmortem or agonal origin. At this time may be mentioned, too, the fissures and fractures of bones that may result from heat and that must be understood if the examiner is to avoid confusion with traumatic lesions. Thus as the top of the head is destroyed extensive cracks and fractures may develop in the crumbling and calcined cranium, due, in part at least, to the formation of intracranial gases. So far as known these fractures do not appear to extend very far into normal bone and do not seem to involve the base of the skull to any extent as a rule, but this is a point on which we seem to lack definite information. Similar fractures are also encountered elsewhere, e. g., as longitudinal, transverse or oblique cracks in the long bones. Articular surfaces also may show numerous cracks.[1]

In all examinations of burned bodies careful attention must be given to the internal organs, because these may contain important changes of various kinds. The presence of soot- and coal-dust along the respiratory tract down into the bronchi is a good sign of the burning having taken place during life. Loosening of the superficial epithelium of the mouth, throat and larynx has been interpreted as due to necrosis by inspiration of hot gases and secondary reactive desquamation; hence, a vital phenomenon. The presence of CO in the blood and organs, as a rule, indicates that burning took place during life, and, in the absence of signs of violent death or internal disease, that death is due to carbon oxid poisoning. In such cases the blood is liquid and light red, and the internal organs and muscles will also be light red.[2] Recently certain observations have been published that indicate that CO may pass into the body through the intact skin.[3] Strassmann and Schultz point out that in postmortem diffusion of coal gas into the body there is a decidedly unequal distribution of the gas, so that there may be a marked contrast between the color in superficial and deeper parts, to say nothing of chemical and spectroscopic differences. At all events extensive postmortem diffusion takes place only after exposure to CO gas for a long time and in closed spaces. Careful consideration of the external conditions consequently may throw much light on this question in a given case.

Burned bodies may assume peculiar positions. It has been shown that if the burns are extensive as the body lies on its back the arms become strongly abducted and supinated; they may be lifted upward and backward; there is strong flexion at the elbows and at times also in the wrists and fingers. The lower extremities are flexed at the hips and knees and often abducted. If the body lies on the side or stomach very peculiar positions may be assumed. These often highly dramatic as well as abhorrent positions are not the result of vital phenomena, as not uncommonly is believed to be the case by laymen, but due to muscular contractions from coagulation by heat; the directions of the movements are explained by the fact that superficial muscles are affected first and possibly also to differences in the susceptibility to heat of the proteids of various muscles.[4]

These brief considerations are intended to be in no sense complete, but simply to emphasize the complexity

1. This and other features of interest in connection with burned bodies are discussed by Harbitz, Norsk Magasin for Lägevidenskaben, 1906, lxvii, p. 521.

2. Concerning spectroscopic and chemical demonstration of CO in the blood, etc., see appropriate works on chemistry and legal medicine.

3. See Wachholz and Lemberger: Vierteljahreschr. f. gerichtl. Med., 1902, xxiii, p. 223; also Strassmann and Schultz: Berl. klin. Wochenschr., 1906. No. 48.

4. Mayer: Ueber den Einfluss hoher Hitze auf die Stellung von Leichen und über Wärmestarre, 1898.

of the problems that may be presented by burned bodies and that it may require a high degree of special knowledge and expert training to investigate them intelligently and lay bare the true state of facts. Unfortunately the American system of medicolegal practice is not calculated to lead to the development of experts in this line of work, the necessity for which in the interests of justice is evident to all. We believe, further, that the custom of not having postmortem examinations in cases of accidental death in general, which include many cases of burning and death from burning, is an unfortunate one, because it deprives medical science of a rich opportunity for observations the results of which would be of the greatest importance in interpreting the findings in suspicious cases.

EXPERIMENTAL ARTERIOSCLEROSIS.

The efforts to solve experimentally some of the problems presented by arteriosclerosis met with but little success until Josué[1] demonstrated that intravenous injections of adrenal extract produce in rabbits sclerotic changes in the aorta. Josué's results have been confirmed and extended by other investigators in Europe as well as in this country. A brief summary of the American work in this line will serve to show how the matter stands at present.

Pearce and Stanton,[2] injecting three minims every other day of a 1 to 1,000 solution of adrenalin chlorid, obtained sclerotic areas in the aorta and small aneurismal bulgings due to degenerative changes and calcification in the smooth muscular fibers of the media. They emphasize that the earliest changes occur in the muscular fibers of the media which appear to be selectively affected as if by a toxic substance with special affinity. Later there occurs mechanical breaking of the elastic fibers and aneurismal dilatation. Klotz[3] obtained the same general results. He also places the earliest change in the muscle cells and elastic tissue; there develop fatty changes and later calcification.

While Josué and others placed the earliest changes in the intima, the authors mentioned are inclined to regard the intimal changes, which are not constant, as secondary, and thus to support the well-known theory of Thoma that in arteriosclerosis the primary lesion is in the media.

The mechanism of the action of adrenalin in causing aortic sclerosis in rabbits can not be said to be clearly understood. The early changes speak in favor of a toxic effect, and the distinctively focal character of the sclerosis suggests interference with the vasa vasorum which so far appear to have been normal structurally. Loeb and Githens[4] obtained hardly any sclerosis with pyrocatechin, a product of the adrenals, which raises the vascular pressure. The limitation of the lesions to the aorta (and the myocardium, Pearce) is as yet without adequate explanation.

When we come to compare the experimental with human arteriosclerosis we find that there is considerable analogy, but also marked differences. Klotz calls attention to the fact that the experimental disease anatomically resembles most a form of sclerosis of the arteries of the extremities (femorals, tibials, iliacs, radials, brachials), described especially by Moenkeberg,[5] which occurs mostly after 50 and is characterized particularly by the limitation of the degenerative and calcareous changes to the media.

Undoubtedly further studies will furnish additional data that may help us to understand better human vascular sclerosis. Other substances, e. g., nicotin and digitalin, are being tried. It is interesting to note, also, that Koranyi found that iodin, when given simultaneously with adrenalin, prevents largely the sclerosis that results when adrenalin is given alone. The importance of Josué's original demonstration is evident; it has given the experimenter the means to study arterial changes under conditions that he can control to a very considerable extent.

1. Presse Médicale, 1903, x, 798.
2. Jour. Exp. Med., 1906, viii.
3. Jour. Exp. Med., 1906, viii, 504.
4. Am. Jour. Med. Sci., 1905, October.

AN AMERICAN DOCTOR OF THE OLD SCHOOL.

It is usually thought that the picture so graphically and touchingly given by Ian MacLaren of the doctor of the old school in "By the Bonny Briar Bush" describes something that is entirely of the past and that can not be found in actual existence at the present day. Any such opinion, however, does not take into account the depths of sympathy in certain natures which prompts them to think rather about others than themselves. There is at least one striking example in our own day of sacrifices quite equal to those of Weelum MacClure, made for a people whose needs are quite as great and whose possibilities of returning anything like adequate rewards for services done them are even less than the Highland population which the Rev. Mr. Watson has described with such feeling. The hero of the story is Dr. Wilfred Grenfell, whose labors for the bodies and souls of the fisherfolk of the Labrador Coast have become very well known in recent years.

His introduction to the American public came in Norman Duncan's "Dr. Luke of the Labrador Coast," which, after running serially in one of our important magazines, had an extensive sale in book form. This proved an excellent introduction to Dr. Grenfell's own "The Harvest of the Sea," which dealt with his experiences in Labrador among the fisherfolk. Norman Duncan's further books have thrown still more kindly light on the subject, and one excellent result has been that the North Coast, as it is called, has become much better known and has received a much larger number of vis-

5. Virchow's Archiv., 1903, clxxi, 141.

itors than ever during the last two or three summers. Not a few of these have gone with the deliberate idea not only of seeing the scene of Dr. Grenfell's work and of coming in contact with some of the kindly fisherfolk whom he and others have described so takingly, but also with the hope of meeting the genial doctor himself.

It is understood that Dr. Grenfell is to visit the United States next month partly in the interests of his patients, the fishermen, and partly in order to put himself once more in touch with such advances in medicine as may prove helpful to him in his work for these needy folk. Physicians generally will doubtless rejoice at the possibility of being brought into personal contact with this interesting medical worker.

THE EARLY DIAGNOSIS OF TYPHOID FEVER.

In the fight against the spread of typhoid fever the early recognition of the disease is of great importance. The Widal reaction, great though its value is, does not usually appear until the end of the first or the beginning of the second week. Of late years, blood cultures have been used in hospitals a good deal, and it has been found that the typhoid bacilli can often be isolated from the blood very early in the disease, and long before the Widal reaction has appeared. The usual method of blood culture, however, requires large quantities of blood and culture media, and can not well be applied outside of hospitals with properly equipped laboratories. About five years ago Conradi[1] discovered that bile *in vitro* hinders the coagulation of the blood, and of late he has applied this knowledge to perfecting a method of cultivating typhoid bacilli from the blood. This method has the advantage, possessed also by the Widal method, that the apparatus needed is simple, and that the preliminary steps can be taken by a man untrained in bacteriology. Conradi's outfit consists of a small sterile bottle of bile to which a little peptone and glycerin has been added, a special blood lance, and a sterilized pipette. The physician obtains the blood by lancing the ear, only one-half to two centimeters being necessary, inoculates it into the bile mixture, and returns the inoculated flask to the laboratory, where, after an incubation of sixteen hours, the bile is reinoculated on to lactose-litmus-agar. Conradi claims that a positive diagnosis can be made in thirty hours in the great majority of cases. The method, if on further investigation it proves to be feasible and successful, might well supplement or even supplant the Widal method, and should certainly be looked into by the workers in the now numerous board of health laboratories.

ABUSE OF THE TUBERCULOUS.

One distressing feature of the tuberculosis problem is that patients bring hardship on themselves and others by seeking climatic treatment without full knowledge of conditions that await them. Thousands are leaving home without adequate means of support and are becoming burdens on communities which do not deserve the responsibility. We have referred to this several times and we now repeat the warning because of a protest, published in *Charities*, from C. H. Gilchrist, superintendent of associated charities, Phoenix, Arizona. Indigent consumptives are still pouring into Arizona and New Mexico to such an extent that Mr. Gilchrist says the conditions force the necessity, either of excluding all tuberculous persons or of denying all assistance to the indigent who come. Neither course, he says, is righteous or Christlike, but relief must be had from the present conditions. Phoenix receives yearly tubercular tourists to the number of one-fourth of its population, and a large proportion of these are either indigent or speedily become so. All possible avenues of employment are overcrowded. *Charities* thinks that physicians are chiefly to blame for this state of affairs and suggests that they should not recommend removal to other climates without warning patients of the stern conditions that will face them if they are without means of support. Physicians can not be held responsible for the action of persons who have simply received the general advice to go to the southwest, but economic conditions demand that physicians spread this warning whenever occasion arises.

1. Münch. med. Wochschr., 1906, vol. liii, p. 1654.

Medical News

ILLINOIS.

Communicable Diseases.—Two cases of smallpox are reported from Hillary, Vermillion County.——An epidemic of diphtheria has reached such dimensions in Brimfield that schools have been ordered closed and public meetings have been prohibited.——Four cases of scarlet fever and 5 cases of diphtheria are reported from Moline.

Warning to License-Issuing Officers.—The State Board of Health has called the attention of mayors, chiefs of police and license-issuing officers of municipalities of Illinois to the fact that in issuing licenses to itinerant vendors of medicine who do not hold licenses as such, issued by the State Board of Health, they are approving and giving their sanction to a direct violation of the state law.

Personal.—Dr. Jonathan Dearborn, Mount Sterling, celebrated his eighty-first birthday, October 6.——Dr. Augustus H. Malm, Princeton, coroner of Bureau County, by virtue of a provision of the state law, will also take the office of sheriff of the county for two months. The law provides that if the sheriff dies within a year of the next succeeding election, the coroner shall fill out the unexpired term.——Dr. S. S. Beaupre has been appointed health officer of St. Anne, vice Dr. D. Henry Pelletier.

Coroners Want Legislation.—The legislative committee of the Illinois Coroners' Association asks that the following matters which have been customs heretofore, to be put on the statute books:

1. To compel witnesses to answer questions under a penalty for refusing.
2. Autopsies to be held and paid for on the order of the coroner.
3. A *per diem* fee for the coroner when inquests extend over one day.
4. To compel physicians to report cases to coroner, and a penalty for failure to do so.
5. Penalty for removing or disturbing a dead body without authority from the coroner.
6. Undertakers not to inject embalming fluid into a body until the coroner allows, under penalty.
7. Undertakers not to use any fluid containing arsenic or strychnin under any circumstances.
8. Coroner to be allowed the same fee as the sheriff for serving subpenas.

Chicago.

Personal.—Dr. Arthur R. Reynolds has returned to Chicago and resumed practice.——Dr. Howard Crutcher, chief consulting surgeon of the Alton System, will, it is reported, move to Mexico, Mo.

Phthisis Camp.—On October 3 the first month of the tuberculosis camp at Dunning ended. Ten men and women are under treatment, and more are expected. Another portable house, which will accommodate four more patients, is almost ready for occupancy.

Appeals for Report of Births.—The health officer reports that at present the health department has a record of only about 60 per cent. of the births in Chicago, and legislation is required which will make it necessary to present a certificate of birth before a child can enter the public schools.

Claims Fulfilment of Gift.—The Presbyterian Hospital has filed a claim for $50,000 against the estate of the late Marshall Field, who, it is claimed, made a tentative bequest of that amount conditional on the donation of $400,000 to the institution by other persons. It is related that this money has been raised by other persons.

Deaths of the Week.—During the week ended October 13 there were 528 deaths reported, 38 fewer than during the preceding week and 51 more than for the corresponding week of 1905. The respective annual death rates per 1,000 are 13.43 and 14.40 and 12.49. Consumption led the death causes with 74, followed by acute intestinal diseases with 62; pneumonia with 48; violence (including suicide) with 46; heart diseases with 39; Bright's disease with 36; cancer with 24, and nervous diseases with 23.

IOWA.

Railway Surgeons Meet.—At the thirteenth annual meeting of the Iowa Association of Railway Surgeons, held in Des Moines, September 27 and 28, Dr. Smith A. Spillman, Ottumwa, was elected president, and Dr. Elbridge H. King, Muscatine, vice-president; Dr. Albert B. Deering, Boone, was reelected secretary, and Dr. E. C. McMeel, Delmar, treasurer.

Communicable Diseases.—Diphtheria is reported to have broken out in the Odd Fellows' Home for Orhpans, Mason City. ——Five cases of typhoid fever are reported near James.—— Typhoid fever is reported to have been prevalent in Sioux City. More than 30 cases have already been reported.—— Scabies is said to be prevalent in the public schools of Keokuk. ——Fifteen cases of diphtheria, with one death, have been reported in Mason City.——From Sweetland Center eight cases of typhoid fever in one family have been reported.

Circular of Warning.—Scott County Medical Society has taken up a commendable project and has had printed 2,000 copies of a circular prepared by Dr. Charles H. Preston, Davenport, dealing with the responsibility of physicians in the matter of instruction of the youth as to the danger incurred through sexual license. This circular has already been placed in the hand of the police matron and the physicians of Davenport, and is at the disposal of parents and others who may desire it. In Dr. Preston's opinion, the pamphlets should also be placed in the hands of factory owners, employers of labor, teachers of advanced schools, etc., where they would be, as a rule, well received, and do much good.

Personal—Dr. Harry R. Irish, Forest City, has been appointed commissioner of insanity, vice Dr. William H. Jones, resigned.——Dr. Thomas F. Desmond, Webster City, sustained a dislocation of the shoulder and hip by being thrown from his carriage at Ackley, September 26.——Dr. Delmer L. Davis has been appointed professor of chemistry in the Sioux City College of Medicine.——Dr. William P. Crumbacker, superintendent of the State Insane Hospital, Independence, was assaulted by an employé of the institution and severely injured. ——Dr. Robert E. Conniff, for many years president and a member of the State Board of Health, was thrown from his buggy in Sioux City, October 4, and seriously injured, three ribs being broken.——Dr. and Mrs. Henry C. Hunter, Sheffield, have returned from Europe.

KENTUCKY.

The State Meeting.—At the fifty-sixth annual meeting of the Kentucky State Medical Association, held at Owensboro, Oct. 10-12, 1906, the following officers were elected for the ensuing year: President, Dr. D. M. Griffith, Owensboro; vice-presidents, Drs. John H. Blackburn, Bowling Green; Milton Board, Hopkinsville, and J. T. Reese, Cynthiana; secretary-editor, Dr. Arthur T. McCormack, Bowling Green; treasurer, Dr. W. B. McClure, Lexington; orator in medicine, Dr. Clarence H. Baught, Richmond; orator in surgery, Dr. J. T. Quinn, Henderson; delegates to the American Medical Association, Dr. J. N. McCormack, Bowling Green, and Dr. W. W. Richmond, Clinton. The next meeting will be held in Louisville. A further report of the meeting will be published in THE JOURNAL next week.

MARYLAND.

Illicit Disposal of Dead Bodies.—The State Board of Health has been making investigations and finds that in various parts of the state dead bodies have been disposed of secretly and illegally for several years. The law requires an official record and a burial permit. The evil is said to be greatest in Baltimore County and in the suburbs of Baltimore, where the matter has assumed the form of a menace to public health. Since May detectives, working under the instruction of Dr. John S. Fulton, secretary of the board, have discovered 44 secret illegal burials in the county, 22 of which were near Highlandtown. Many of the bodies were buried only a few inches beneath the surface of the earth and became uncovered by the action of the rain. On October 12 Dr. Fulton swore out warrants against 20 residents of the county, charging them with having violated the law.

Baltimore.

Deaths of the Week.—The deaths for the week ended October 13 were unusually numerous, numbering 220, as compared with 176 for the corresponding week for 1905, the annual death rate for whites per 1,000 being 16.82 and for colored people 33.70. The notable increases in death causes were from pneumonia and consumption.

Sir Almroth E. Wright.—So much interest was evinced in the lectures of Sir Almroth E. Wright, mentioned in last week's issue, that two additional lectures were given, one being a demonstration of methods. Prof. William H. Welch, in summing up the lectures of Dr. Wright, places his achievements on a par with those of Pasteur and Behring, who had worked along the same line, namely, that of immunization. Dr. Wright left Baltimore October 12 and returns to Europe this week.

Keiber in Baltimore.—Dr. Franz Keiber, professor of anatomy in the University of Freiburg, spent several days in Baltimore last week, looking up methods of research in the Baltimore laboratories. He was the guest of Prof. Franklin P. Mall and was tendered several dinners and also a reception at the Johns Hopkins Club. From Baltimore he goes to the Smithsonian Institution, in Washington, and thence to the Rockefeller institute, in New York City, sailing for Europe October 27.

Must Accept Vaccination Certificates.—The city solicitor has given an opinion that the school board must accept certificates of vaccination from physicians in private practice, showing that pupils in public schools have been successfully vaccinated. He has also decided that health department officials have a right to enter the public schools at any time and examine the arms of the children, and, if they are not found to be properly vaccinated, to require that the same be done either by the health warden or by a private physician.

Hebrew Hospital Festival.—At the thirty-ninth annual Succoth festival of the Hebrew Hospital and Asylum, October 7, $2,800 was collected for the institute. It was announced that the widow of the late president had increased her donation for the erection of a new hospital building from $75,000 to $80,000; that in addition she had donated $4,000 for the erection of a memorial room, to be dedicated to the care of professional nurses, and that in addition she proposes, when the new hospital is built, to endow a room in memory of her late husband, at a cost of $4,000.

Personal.—Dr. Henry M. Hurd, professor of psychiatry in the Johns Hopkins Medical School, and secretary of the new Johns Hopkins Hospital, has been given a year's leave of absence and will spend it in travel in Europe, leaving about November 15. His place will be taken by Dr. Rubert Norton, formerly house physician in the hospital.——Dr. G. H. Whipple has been appointed assistant pathologist at the Johns Hopkins Hospital, vice Dr. C. H. Bunting, resigned to accept the position of professor of pathology at the University of Virginia.——Dr. J. Whitridge Williams has been made director of the dispensary with Dr. Thomas McCrae as assistant.—— Dr. Pearce Kintzing has returned from abroad.——Dr. Joseph C. Hemmeter returned from abroad October 11, after an absence of five months.

NEW YORK.

New York City.

Bellevue's Demand Questioned.—The request of the president of Bellevue and the Allied Hospitals for an increase of $226,559 over last year's appropriation has been refused, and the institution has been called on to account for the delay in erecting the new nurses' home.

Aid to the Injured.—The board of education will give sixteen courses of five or six lectures each on "First Aid to the Injured" during October and November in its public lectures

centers. These lectures will be illustrated with stereopticon views and practical demonstrations, and at the close examinations will be held and certificates of efficiency will be awarded by the Society for Instruction in First Aid to the Injured.

Contagious Diseases.—There were reported to the sanitary bureau for the week ending October 6, 346 cases of tuberculosis, with 154 deaths; 199 cases of diphtheria, with 22 deaths; 121 cases of typhoid fever, with 25 deaths; 49 cases of scarlet fever, with 3 deaths; 32 cases of whooping cough, with 15 deaths; 30 cases of measles, with 2 deaths; 12 cases of cerebrospinal meningitis, with 11 deaths, and 11 cases of varicella, making a total of 800 cases, with 232 deaths.

Personal.—Dr. Louis A. Stimson arrived from London after a twelve days' voyage on the yacht *Aphrodite*.—Dr. and Mrs. William B. MacCracken sailed on the *Minneapolis* for London October 13.——Dr. Charles Laight sailed for the Mediterranean on the *Princess Irene* October 13.——Dr. Julius L. Amster, while driving along East One Hundred and Eighty-ninth Street, was struck by a car, which completely demolished his carriage and threw him out, sustaining a broken shoulder, several fractured ribs and internal injuries.

Park Milk Stations.—Health officials have long admitted the beneficence of the Nathan Straus milk stations and recognized the crying need for an extension of the work. At last an application has been made for an appropriation of $20,000 with which to establish permanent pasteurized milk stations in ten small parks of the poorer districts. It is hoped that in time the city will furnish the 10,000 quarts of pasteurized milk per day which it is estimated will be necessary to supply the entire infantile demand of the tenements.

City Noises.—At a recent meeting of the Society of Medical Jurisprudence Dr. Darlington read a paper on "Noises and Their Control," in which he expressed the opinion that little could be done to suppress many of the unnecessary noises unless the people themselves helped by arousing public sentiment, forming an anti-noise league, demanding the help of taxpayers, etc. A resolution was presented to the board of trustees of the society requesting that the police commissioner be asked to enforce the ordinance regarding unnecessary and illegal noises.

School Children Need Medical Attention.—The committee on the physical welfare of school children has made an appeal for more money in order that a large number of medical inspectors may be appointed for the purpose of making a more thorough physical examination of school children. There are now 209 school inspectors, and it seems that 300 or 350 would be required for the proper examination of all school children, as there are some districts where the work is far beyond the capacity of the inspectors. The board of health is getting out a double postal card, one to the parent telling what ails the child and requesting that the family physician be consulted, and the other to the family physician stating what the board of health has done in the way of treatment for the child. In order to facilitate the better feeding of school children the Association for Improving the Condition of the Poor has placed in the field a visiting cook, who goes to the homes of the pupils and shows the mother in her own kitchen, with the utensils at her command, how to prepare food in the most nourishing and practical ways. There is need for a number of cooks who would teach mothers in this way.

PENNSYLVANIA.

Philadelphia.

Vital Statistics.—During September 2,933 births and 1,850 deaths were reported.

Civil-Service Examinations.—Examinations will be held during November for the position of chief resident physician to the Philadelphia Hospital at a salary of $4,000, and assistant resident physician to the Municipal Hospital at a salary of $800.

Bacteriologic Laboratory Report.—The report of the bacteriologic laboratory of the health bureau for September shows that 580 specimens were examined for diphtheria bacilli; 416 examinations were made of typhoid fever blood; 372 examinations were made of milk, and 114 of sputum. The laboratory supplied 2,251,000 units of antitoxin, made 6 disinfection tests and 90 chemical analyses.

Medical Inspection.—During September 3,317 inspections were made by the medical inspectors, excluding schools; 365 fumigations were ordered, and 17 cases were observed that required special diagnosis; 3,887 visits were made to the different schools throughout the city, and 485 children were excluded from the schools; 173 cultures were taken for examination, 94 injections of antitoxin were made, and 1,392 vaccinations performed.

Diseases Show Decrease.—Reports received by Health Commissioner Dixon show a steady decrease in diphtheria and scarlet fever cases since January of this year. In the first month of the year 1,042 cases of diphtheria were reported; February, 885; March, 852; April, 703; May, 688; June, 546; July, 437, and a slight increase over July during the month of August. The scarlet fever report is as follows: January, 879; February, 875; March, 758; April, 687; May, 701; June, 517; July, 378; August, 350.

Pure-Food Law Attacked.—The Grocers' Association of Philadelphia has attacked the constitutionality of the dairy and pure food commission before the Supreme Court in Pittsburg. They base their assertion on article 27 of the state constitution which prohibits state inspection of foods, and merchandise. Attorney-General Carson, who defended the commission, states that he does not think the grocers' association has any grounds for the attack, as the food commission was not violating the state constitution.

Hospital Reports.—During September the Mount Sinai Hospital admitted 48 patients, making, with the 22 patients under treatment at the beginning of the month, a total of 70 treated. Of this number 40 were discharged cured, 5 improved, 8 left without permission and 3 died, leaving 26 patients under treatment at the end of the month. In the out-patient department 3,505 visits were paid. Of the total visits 945 were by new patients. Of the new patients, 191 skin, 8 diseases of the nerves, 47 gynecologic, 64 nose, throat and ear, 237 children, 42 were medical, 232 surgical, 211 eye cases and 150 dental. In the emergency ward there were 277 cases treated, 23 being patrol cases.——The report of the Stetson Hospital for September shows that a total of 1,455 patients were treated at the daily free clinics. Of these 593 were surgical cases. There were 254 cases of eye disease, 304 of ear, nose and throat trouble.

Health Report.—The number of deaths reported for the week ended October 13 aggregated 493, an increase of 91 over the number reported last week and an increase of 125 over the number reported in the corresponding week of last year. This large increase is attributed to the sudden cold weather of the past few days. The principal causes of death were: Typhoid fever, 10; whooping cough, 9; diphtheria, 7; tuberculosis, 68; cancer, 36; diabetes, 5; apoplexy, 13; paralysis, 6; endocarditis, 7; heart disease, 45; acute respiratory diseases, 38; enteritis, 34; cirrhosis of liver, 5; Bright's disease, 39; congenital malformations, 10; premature births, 16; congenital debility, 12; accidents, 5; accidental traumatisms, 10, and marasmus, 10. There were 203 cases of contagious disease reported, with 19 deaths, as compared with 183 cases and 18 deaths during the previous week.

Medical Inspection in Schools.—Dr. A. C. Abbott, chief of the bureau of health, states that he is well pleased with the work of two nurses in their attendance at the schools and favors increasing the force to eight. The work of the assistant medical inspectors has been criticised on the grounds that, as the inspectors have to report contagious diseases in addition to the school duties, disease might thus be transmitted. Dr. Abbott meets this assertion by the statement that he has yet to learn of a single case of disease being transmitted as a result of the visits of the medical inspectors. The latter begin their day's work by visits to the schools, and with the exception of a few kinds of cases, do not see the patients until they are convalescing, securing their early information from other members of the family. The inspectors are required to disinfect themselves and adopt other precautions, so that the danger of contagion is reduced to a minimum.

TENNESSEE.

Sanitarium Opened.—Drs. J. McChesney Hogshead and Darius N. Barrett, Chattanooga, have opened a sanitarium at that place, devoted especially to diseases of the eye, ear, nose and throat.

Medical Society Meeting.—The sixteenth annual session of the Eastern Tennessee Medical Society was held in Johnson, October 4 and 5. The following officers were elected: President, Dr. Walter S. Nash, Knoxville; vice-president, Dr. H. H. Campbell, and secretary and treasurer, Dr. William M. Copenhaver, Bristol.

Cruelty Charges Baseless.—At a meeting of the board of trustees of the Western Hospital for the Insane, Bolivar, called to investigate the charges of cruelty to patients, which had been preferred against the assistant physician and three at-

tendants, the trustees concluded that the charges had been grossly exaggerated and had been sustained in no single instance.

Sentenced for Criminal Practice.—Dr. John L. D. Walker, Chattanooga, charged with illegal criminal practice, who was convicted by the lower court and the decision affirmed by the Supreme Court, is reported to have been sentenced to imprisonment for 11 months and 29 days in the workhouse. The prosecution was at the instance of the Hamilton County Medical Society.

Tuberculosis.—At a session of the State Board of Health in Nashville, October 2, the general question of the eradication and prevention of tuberculosis in state institutions was discussed. The committee appointed to look into the question of tuberculosis in state prisons submitted a verbal report, and more time was extended to the committee and its powers enlarged, so that it might make the same investigations in all state institutions.

Personal.—Dr. George G. Benson, Nashville, was seriously injured in a runaway accident, October 1.——Dr. A. L. Sharber has resigned as house physician of the Nashville City Hospital, and Dr. R. W. Grizzard, Jr., has been elected to succeed him. Dr. Sharber has accepted the chair of anatomy in the University of Tennessee.——Dr. James J. Teas, Waverly, has been elected secretary and treasurer of the Humphreys County Medical Society, vice Dr. Claude C. Sullivan, resigned.

Colleges Open.—The College of Physicians and Surgeons, Memphis, opened October 1. Prof. Rhea P. Carey made the opening address and Dr. Heber Jones acted as master of ceremonies.——Memphis Hospital Medical College opened for its twenty-seventh annual session, October 1. Dr. Frank Jones has been selected to fill the chair of clinical medicine and diseases of the chest, vice Dr. Dudley D. Saunders, resigned.——The University of Tennessee, Nashville, opened October 1. Dr. Guffin W. Bull delivered the opening address on "Appreciation, Application and Addition." Dr. E. M. Sanders has been elected assistant to the chair of gynecology and placed in charge of the anatomic library.——The University of Nashville opened October 1. Dr. W. G. Ewing, dean of the university, delivered the opening address, and an address was also made by Dr. Hugh Paggett, the recently elected professor of medicine.——The Medical Department of Grant University, Chattanooga, opened October 3. Among the new members of the faculty are Dr. J. McChesney Hogshead, instructor in anatomy; Dr. Darius N. Barrett, instructor in neurology; Drs. Joseph W. Johnson and J. B. Fields, assistants to the chair of practice of medicine, and Dr. William A. Duncan, assistant to the chair of surgery.

TEXAS.

Diphtheria.—An epidemic of diphtheria is reported to be prevalent in Deport, Lamar County.——Many cases of diphtheria are said to exist in the West Side addition to Taylor.

Personal.—Drs. Jesse M. Pace and Charles M. Rosser have been sworn in as members of the board of health of Dallas.——Dr. Z. T. Bundy, Milford, has been appointed surgeon of the Confederate Home, Austin, vice Dr. G. Horace Gilbert, resigned to accept a position as assistant physician in the State Insane Asylum, Austin.

Tabor Endorsed.—At a meeting of the Dallas County Medical Association October 1, resolutions were unanimously adopted endorsing the recommendation that the incoming governor continue in office the present state health officer, Dr. George R. Tabor, whose service has proved entirely satisfactory and reflects unusual credit on the medical profession.

Pasteur Institute Report.—Dr. Benjamin M. Worsham, Austin, superintendent of the State Pasteur Institute, reports that during the first fiscal year 81 patients were treated without the development of a single case of hydrophobia, and that during the second year 254 patients were treated, 226 of whom came from Texas, with 2 deaths. The total fees collected were $2,410 and the disbursements were $1,039.36.

Hospital Notes.—An effort is being made to establish a hospital at Yoakum by Dr. Charles H. Brueur of Crete, Neb. An organization was effected at the meeting September 26, trustees elected and the question of the purchase of a building considered.——The Physicians and Surgeons' Hospital of Greenville has been incorporated with a capital of $10,000. The Southern hotel property has been purchased and the building will be remodeled for hospital purposes.

State Health Officer's Report.—In the biennial report of Dr. George R. Tabor, state health officer, he directs attention to the fact that four years ago 75 per cent of the populated counties of Texas were infected with smallpox, but that the disease was rapidly decreasing. Yellow fever has not appeared in Texas this year, and when it was prevalent in Louisiana last year it was kept out of Texas at a cost of less than $30,000. He bears testimony to the efficient services rendered by the Texas quarantine officers on the borders of Louisiana, Arkansas and Indian Territory. The operating expenses of the department for two years amounted to $45,372, or less than for the previous biennium.

Medical Colleges.—The Medical Department of Fort Worth University opened for its thirteenth annual session, in its new building, October 2. Dr. Frank Gray, dean of the department, presided.——The College of Physicians and Surgeons, Dallas, opened for its fourth annual session October 1.——The Medical Department of the University of Texas, Galveston, opened for its sixteenth annual session October 1. Dr. J. F. Y. Payne, professor of obstetrics and gynecology, delivered the opening address.——The Southwestern University Medical College, Dallas, opened for its fourth annual session October 1, in its new building.——Baylor University College of Medicine, Dallas, began its sixth annual session October 1 in its temporary quarters at the Good Samaritan Hospital.

State Hospital Reports.—The superintendent of the Southwestern Insane Asylum, San Antonio, in his fifteenth annual report states that the average number of inmates during the year was 737. Patients were cared for at an average daily cost per capita of 42 cents. During the year 70 patients were admitted, 45 patients discharged and 23 deaths occurred.——The State Lunatic Asylum, Austin, in its forty-fourth and forty-fifth annual report, showed that during the fiscal year ended Aug. 31, 1906, the total population of the institution was 1,171, and that during the year 59 deaths occurred. During the biennium ended August 31, 232 patients were discharged from the institution, 155 of whom had been on furlough for several months. Tuberculosis caused 36.2 per cent. of the total number of deaths. Dr. Worsham believes that the laws governing the admission of patients should be changed and modified, that court trials should be done away with and that laws similar to those governing epileptics would meet the requirements and be much less expensive. He also recommends, in addition to the regular appropriation, an appropriation for $85,000 for a new building to accommodate 500 new patients, and also recommends that separate provision be made for the criminally insane.

GENERAL.

Erie Railway Surgeons Meet.—The fifteenth annual convention of the Association of Erie Railway Surgeons was held in Chicago, October 10 and 11. New York was selected as the next place of meeting, and the following officers were elected: President, Dr. Daniel A. Currie, Englewood, N. J.; vice-president, Dr. Frank D. Bain, Kenton, Ohio, and secretary-treasurer, Dr. Jere A. Allis, Upper Montclair, N. J.

Want Public Health Department.—At a meeting of the Conference on Home Economics, held at Lake Placid in September, according to *Science*, it was proposed that the Public Health and Marine-Hospital Service be asked to issue a popular bulletin for the information of the public on health matters as the Department of Agriculture does in its domain. The conference decided to communicate to President Roosevelt its approval of this plan and also of the establishment of a national department of health to coördinate and to extend the work done in this line by the government.

Yellow Fever in Cuba.—Dr. von Ezdorf reports that 6 new cases of yellow fever, with 2 deaths, occurred during the week ending October 2. Two of these cases were from Guanabacoa, which is a town located across the bay of Havana. One of the cases was discovered in the general wards of Covadonga Hospital and no precautions in the case had been taken. In none of the cases could the source of infection be traced. It is evident, Dr. von Ezdorf states, that the disease is spreading, and that unknown foci of infection are scattered over the city of Havana, and in two suburbs, Guanabacoa and Vedado. The sanitary forces in Guanabacoa have been increased and medical inspectors are daily inspecting the non-immunes in and around the suspected districts. The fumigating and oiling forces in Havana, which at the beginning of the month had been decreased, have also been increased, so that there are now 150 men in the fumigating brigades; 110 men compose the oiling forces and 30 men are for cleaning of ditches and making drains.

Harvey Society Lectures.—The second course of lectures under the direction of the Harvey Society of New York will be given at the Academy of Medicine building, 17 West Forty-

third Street, New York, Saturday evenings at 8:30. The lectures are open to the public and all interested are cordially invited to attend. The program is as follows:

October 20: Prof. A. E. Wright, London, "Therapeutic Inoculation with Bacterial Vaccines."

November 3: Prof. C. A. Herter, New York: "The Common Bacterial Infections of the Digestive Tract and the Intoxications Arising from Them."

November 17: Prof. W. T. Porter, Boston: "Vasomotor Reflexes."

December 1: Prof. J. G. Adami, Montreal, "The Myelins and Potential Fluid Crystals of the Body."

December 15: Dr. S. J. Meltzer, New York: "The Factors of Safety in Animal Structure and Animal Economy."

January 12: Prof. F. G. Benedict, Middletown, Conn.: "Metabolism During Fasting."

January 26: Prof. E. B. Wilson, New York: "Recent Studies of Heredity."

February 9: Prof. G. S. Huntington, New York: "The Genetic Interpretation of Variations in the Genitourinary Tract."

February 23: Prof. W. T. Councilman, Boston: "The Relation of Certain Leucocytes to Infectious Diseases."

March 9: Prof. Friedrich Müller, Munich, "Neuroses of the Heart."

CALIFORNIA FUND.

RELIEF COMMITTEE OF PHYSICIANS OF SAN FRANCISCO.

LANE HOSPITAL, SAN FRANCISCO, Sept. 28, 1906.

The Relief Committee of Physicians of San Francisco respectfully submit the following, its first report. In doing so it begs to extend sincere thanks not only in its behalf, but in the name of the profession of this city and surrounding country, to all who have contributed so nobly and generously in assisting our afflicted brethren.

We desire to express our grateful appreciation to all who have aided us, namely:

May 10	Brooklyn (N. Y.) Medical Society	$1,500.00
	St. Louis Med. Soc., per Dr. Geo. Homan, Pres.	600.00
May 11	Norfolk District (Mass.) Medical Society	407.00
May 12	Governor's Relief Committee of Hawaii, per James F. Morgan, Esq.	1,000.00
	Dr. W. J. G. Dawson, Eldridge, Cal.	50.00
	Dr. G. L. Simmons, Sacramento, Cal.	50.00
	Dr. S. B. Knox, Santa Barbara, Cal.	10.00
May 17	Dr. Chas. L. Allen, Trenton, N. J.	25.00
May 18	San Joaquin County (Cal.) Medical Society	60.00
	Ventura County (Cal.) Medical Society	37.50
May 19	Fresno County (Cal.) Medical Society	200.00
	Essex District (Mass.) Medical Society	200.00
May 21	Dr. R. W. Sturgis, Tanners Creek, Va.	5.00
May 23	John B. Jackson, Esq., Pittsburg, Pa.	2,500.00
	Hon. John Weaver, Mayor, Philadelphia, Pa.	2,500.00
May 24	Oregon State Medical Society	500.00
	J. A. Folger, Esq., San Francisco	1,000.00
May 26	Dr. F. C. E. Mattison, Pasadena, Cal.	50.00
May 28	Pasadena Med. Society, per John E. Janes Clerk	322.00
	Dr. Chas. T. Kuhn, San Francisco	5.00
	Monroe County (N. Y.) Medical Society	216.00
May 29	Riverside County (Cal.) Medical Society	70.00
	M. J. Breitenbach Company, New York	500.00
	Dr. A. Gude & Co., Leipzig, Saxony, Germany.	500.00
May 30	Dr. H. O. Walker, Detroit	200.00
	Dr. J. L. Robinson, Reno, Nev.	60.00
May 31	S. W. Kentucky Medical Assoc., Paducah, Ky.	100.00
	Miss Lilla C. Wheeler, Portville, N. Y.	300.00
	County Med. Soc., Coleman, Texas (Dr. S. N. Aston, Secretary)	5.00
June 1	Spokane Physicians, Spokane, Wash.	111.75
June 2	Santa Clara (Cal.) County Medical Society	600.00
	Dr. R. W. Gardner, Orange, N. J.	100.00
	Smith, Kline & French Co., Philadelphia	100.00
	St. Louis Medical Society (second donation)	262.70
June 4	Mrs. D. G. Bartnett, Pacheco, Cal.	10.00
	Santa Barbara Co. Med. Soc., per Dr. Wm. T. F. Flint	85.00
June 7	American Medical Association fund	4,495.32
	Chicago Medical Society	4,000.00
	Philadelphia Committee	1,999.50
	Placer County Medical Society, Grass Valley, Cal., per Dr. J. T. Jones	80.00
June 14	Orange County Medical Society, per Dr. H. S. Gordon, Secretary	58.50
	Portland Chamber of Commerce, Portland, Ore.	1,000.00
	Dr. Wm. J. G. Dawson, refund on Pullman berth	2.50
	Dr. Ella P. Downing, San Francisco	5.00
June 15	Dr. C. L. Muller, Nevada City, Cal., per Dr. J. T. Jones	20.00
	W. W. Herron, Esq., Mobile, Ala.*	100.00
	Dr. H. E. Stroud, Phoenix, Ariz.*	25.00
	McLean County Med. Society, Bloomington, Ill.*	90.00
	New York Academy of Medicine and Medical Sciences, New York*	3,000.00
	United Protestant Churches of Williamsbridge, N. Y.*	124.56
	Dr. Lefferts A. McClelland, Brooklyn*	5.00
	Minnesota State Nurses' Association*	66.00
June 18	Monterey County Physicians, California	105.00
	Physicians of the Boroughs of Manhattan, Bronx and Richmond, N. Y., per Dr. Chas. H. Richardson, Treasurer	3,000.00
	Monroe County (N. Y.) Medical Society	19.00
June 19	Chamber of Commerce, N. Y.*	5,000.00
June 21	Bartow County (Ga.) Medical Society	9.50
June 22	Riverside County (Cal.) Medical Society	30.00
	Nevada County (Cal.) Medical Society	5.00
June 28	Dr. M. A. Craig, Lower Lake, Cal.	5.00
	Unknown donor, Sydney, Canada	1.00
	Santa Clara County (Cal.) Medical Society	25.00
June 29	Chautauqua County Medical Society	71.29
July 2	Central Willamette Medical Society, per Dr. W. A. Trimble, Albany, Ore.	25.00
July 9	American Medical Association fund	2,000.00
July 16	Kings County (N. Y.) physicians (through Red Cross)	600.00
	New York Medical Society (Dr. C. H. Richardson, Treasurer)	1,000.00
July 23	Dr. H. O. Blake, care Darien Gold Mining Co., Panama, per Frank S. Betz, Hammond, Ind.	15.00
July 24	Santa Clara County Medical Society, per Dr. Wislocki	20.00
July 27	Yellowstone Valley Med. Soc., Billings, Mont.	24.00
Aug. 1	Dr. F. M. Pottenger, Los Angeles, Cal.	5.00
Aug. 13	Dr. L. Lebus, Ross Valley Cal.	10.00
Aug. 21	St. Louis Medical Society	36.00
Sept. 4	American Medical Association	3,000.00
Sept. 12	Dr. Henry Hertel	5.00
		$44,324.12

* Through the Finance Committee.

STATEMENT.

RECEIPTS.

Donations		$44,324.12
Sale of instruments		122.55
Sale of books		201.48
Sale of desks and chairs		323.01
Other sales		16.50
Dr. P. M. Jones, secretary State Medical Society, payment of note	$581.35	
Dr. P. M. Jones, payment on note	618.65	1,200.00
		$46,187.66

DISBURSEMENTS.

Money distributed to physicians (321) on notes, $2,856.	$23,512.80
Purchase of instruments distributed to physicians	613.06
Purchase of books distributed to physicians	203.00
Dr. P. M. Jones, secretary State Medical Society, on note, for purchase of furniture	1,200.00
Freight and cartage	127.99
Advertising notices in newspapers	25.00
Printing: Physicians' directory, application blanks, etc.	31.00
Sundry expenses: Stationery, etc.	42.40
Salaries	795.00
Purchase of office desks and chairs for distribution	618.65
	$27,168.90

Receipts	$46,187.66
Disbursements	27,168.90
Balance on hand	$19,018.76

DR. W. I. TERRY, President.	DR. EMMET RIXFORD, Treas.
DR. GEORGE W. MERRITT.	DR. JULIUS ROSENSTIRN.
DR. LUCY M. F. WANZER.	DR. HERBERT MOFFITT.
DR. THOS. W. HUNTINGTON.	DR. JOHN GALLWEY.
DR. M. O. AUSTIN.	DR. GEORGE H. EVANS.
DR. PHILIP KING BROWN.	DR. JAS. WARD.
DR. F. K. AINSWORTH.	DR. FRED W. LUX, Secretary.

CANADA.

University News.—Two students of Toronto University, since the opening of the 1906-1907 term, have been killed at football.——For engaging in the annual "rustle" 35 medical students of Toronto University have been fined $5.——The Undergraduates' Society of McGill University and the McGill Medical Society will amalgamate.

Prevalent Diseases.—There are 231 or more cases of typhoid fever reported in Fort William, Port Arthur, The Sault, Copper Cliff, Rainy River and Parry Sound. There were 25 deaths from the disease in September.——To prevent the spread of disease among the school children of Montreal the local board of health has issued printed instructions to each school teacher, to aid them in coöperating with the medical inspectors.——It is not the intention of the government of Canada to remove the 7 or so cases of leprosy at D'Arcy Island, B. C.

Cereals in Potted Meats.—The inland revenue department has published an analysis of potted meats and bologna sausage. In 23 samples purchased in the open market in the province of Quebec and 23 in the maritime provinces, there were found corn starch and meal from cereals. In the province of Ontario 37 samples had been so manipulated, the majority of these being of Chicago manufacture, but some were from Toronto, Montreal and Vancouver. In the opinion of the chief analyst the terms "potted" and "deviled" do not justify the addition of flour or cornmeal. Of 32 samples of bologna and other sausage 11 contained dyes and 5 preservatives.

Hospital News.—During September 282 patients were admitted into the wards of the Montreal General Hospital and 285 were discharged. There were 21 deaths, 9 of these occur-

ring within three days of admission. The outdoor consultations numbered 3,730.——St. Michael's Hospital, Toronto, will build large additions. When completed the hospital will have 300 beds.——The graduating exercises of the Training School of Grace Hospital, Toronto, took place last week. One hundred and ten nurses have been graduated from this institution up to the present time. The hospital treats annually about 1,355 patients.——St. Michael's Hospital, Grace Hospital and the Western Hospital will shortly ask the city for a grant of $50,000 each.——The Canadian Northern Railway is taking steps toward the establishment of a series of hospitals thoroughly equipped with every modern requirement at the divisional points of the system, presumably at Port Arthur, Rainy River and Winnipeg.

FOREIGN.

Ophthalmologic and Gynecologic Missions.—The French minister of the interior has appointed Darier, the well-known ophthalmologist of Paris, to go to Germany and study the arrangements for the hygiene of the eyes in the schools and instruction in ophthalmology. He has also sent Platon of Marseilles to study the arrangements for teaching gynecology.

The Semmelweis Memorial.—At Budapest, in Hungary, on September 30 a tablet was placed to mark the house where Semmelweis was born and a statue of him was unveiled in a public square. The ceremonies included a series of addresses in the university hall in which he was extolled as one of the greatest pioneers in the whole history of medicine and one of the greatest martyrs to his convictions. He died at last, it is said, of a broken heart, because his views met such constant opposition and ridicule.

Black List of Medical Grafters.—The German medical press has commenced the compilation of a black list of those medical authors who write articles on the products of the manufacturing chemists and others for pay, and those who publish articles in various journals, alike or similar in form. An article by an author on the black list will not be accepted by the representative medical journals, and such an article encountered elsewhere will not be abstracted in reviewing. A similar list would be of value in other countries.

MSS. of Physicians from the Earliest History of Medicine.—The Berlin Academy of Sciences has been examining the rich material of ancient medical MSS. in its library, and has just published the first volume of a descriptive catalogue, devoted to works dealing with Hippocrates and Galen. The work has been in charge of Professors H. Diels and G. Schöne. After the complete catalogue is issued it is proposed to publish all the MSS. in full. Professor Heiberg of Copenhagen is to help in this task, especially with the Egyptian papyri.

To Differentiate Harmless from Serious Albuminuria.—Hingston Fox of London sent a communication to the recent Congress of Insurance Examiners stating that it is possible to distinguish between the harmless, transient form of albuminuria and the albuminuria due to an actual kidney affection. The harmless kind is the result merely of a deficient coagulating power of the blood. By administration of calcium lactate the blood is rendered less fluid, and the albumin vanishes from the urine in the harmless, hematogenic form of albuminuria, while it persists unaffected in the renal variety.

Postgraduate Course on Medical Aspect of Accident Insurance.—A free postgraduate course is being held this month at Berlin which deals with accident insurance as it affects the physician, the treatment of the results of accidents by the neurologist, by the surgeon, etc., the special features of official and private accident insurance, and insurance of the physician against accidents. The attendants at the lectures, in groups of six, were given practical instruction in examining victims of accidents, in making out certificates of injury from accidents and in estimating the amount of damage to the earning capacity, etc.

Pension for Tuberculous Government Employé.—An employé of the French government postal and telegraph service was stationed at Bastia. He was in robust health when he arrived there, but he died a year or so ago from tuberculosis. His widow applied for a pension on the ground that the office in which her husband had to work was insanitary, and that he was compelled to work with a person known to be a consumptive, and that the two employés who had preceded him had likewise died of tuberculosis. She demanded the pension accorded to widows of government employés dying from accidents resulting from the exercise of their professional duties. Appeal to the highest authorities gained her the pension and has started a widespread movement for the sanification of the post and telegraph offices.

Damage Suits Terminating in Favor of the Surgeons.—Professor Berger of Paris was recently sued by a couple whose child he had been operating on. He had undertaken a series of plastic operations to restore the face of the child, but for certain medical reasons was obliged to abandon the attempt. The parents sued him for not having completed the task, but the court dismissed the case. Dr. Aubeau of the same place was also recently sued by a woman for $10,000 damages on account of an indispensable gynecologic operation which he had successfully performed. She claimed that the operation had been too complete. He entered a counter suit, claiming 1 franc damages for her abusive pursuit. The woman's case was dismissed and the physician was awarded the damages he asked. An editorial in the *Gaz. Méd. Belge* says that times are becoming brighter; ten years ago the courts would in all probability have decided differently.

First International Conference on Cancer.—The opening of the Institute for Cancer Research at Heidelberg, September 25, was celebrated by an international gathering of cancerologists—a notable assembly. The institute is the first separate and endowed hospital and laboratory for the study and treatment of cancer yet erected in Germany, and von Czerny expects to devote his entire time to it. The transactions of the conference are to be published in full in a supplementary number of the *Zeitschrift f. Krebsforschung*. The opening address was by von Leyden, who reviewed the history of cancer and its treatment, and declared that he had always been an advocate of the parasitic origin of cancer. It is becoming generally accepted now, however, he added, that the cell itself is the parasite. It assumes the properties of a parasite, and thus are harmonized the conflicting views in regard to the cellular and the parasitic origin of cancer. Experiments in his laboratory have demonstrated that the chemical characteristics of the cancer cell differ materially from those of the normal cell. The cancer cell generates an enzyme of toxic action which spreads around and causes proteolytic processes that reduce the resisting power of the environing cells before the encroachments of the cancer cells. In referring to the conference none of our exchanges mention any communications as specially epoch-making.

The Traumatic Epidemic in Russia.—Under this heading the *Russische med. Rundschau*, iv, No. 8, 1906, quotes Schbankoff of St. Petersburg to the effect that conditions in Russia at present are more radical and more horrible than during the French Revolution, although just at present the disease process has assumed a more latent form. The traumatic epidemic, an epidemic of murder and deeds of violence of all kinds and in their most bestial forms is pathologic and deserves the greatest interest of physicians. The appearance of a new class of men is described, "the so-called Hooligans," all from the cities, who serve indiscriminately the government or the revolution, wherever there is murdering and robbing going on. All the old ideals and principles are crashing around one's ears, and life seems not worth the living, there is nothing left to live for, and people turn and rend each other or commit suicide. The traumatic epidemic has spread to the peasants in some regions and fathers shoot down their families, feeble old women strangle others still more feeble, all are too excited to work, and no one is sure of the morrow. The article concludes with the statement that the further spread of the epidemic seems to have been checked for the moment and that possibly the contagium may be destroyed by the vigorous antiseptic measures now being used or that Russia may develop in its own body an effectual antitoxin. THE JOURNAL wishes to inquire whether conditions in Russia are not too serious to be treated in this facetious and flippant manner.

The Ruined Doctor.—Under this title the *British Medical Journal*, Sept. 29, 1906, comments on letters from medical practitioners appearing in newspapers complaining of the insufficient remuneration which rewards the labors of the medical profession. This state of affairs is attributed to various causes, some finding it in the competition of hospitals, others in that of the consultant or prescribing chemist. One writer believes the falling off in medical incomes is due to the influence of hygienic measures in diminishing the prevalence of zymotic diseases. The *British Medical Journal* is of the opinion that British physicians are at present passing through bad times, their incomes during the last three years having fallen off 25 per cent. The chief causes of this are said to be, first, the gradual dying down of the epidemic of influenza of 1900 and the mild winters; second, the depression of trade resulting partly from the frightful cost of the Boer war. It is thought to be extremely probable that with the revival of trade and the freer circulation of money medical practice will regain its normal level of prosperity. Furthermore, infectious

diseases come and go in tidal waves, and there does not seem to be need for any immediate fear that the profession will suffer from permanent want of employment, especially in view of the fact that man is still far from having attained to mastery over the microbe, and is as unwilling or unable as ever to control those passions and appetites which engender in him a perennial crop of ailments, all of which contribute to the support and maintenance of the medical profession.

The German Naturforscher Congress.—The seventy-eighth annual assembly of the Association of German Physicians and Scientists (*Naturforscher*), was held at Stuttgart, September 16 to 22. It is similar in scope to the associations for the advancement of science in other countries, but it has always been distinguished by the large numbers of men who are actual leaders who are willing to leave their work and mingle with the younger set, to give the youngsters and the rank and file of the medical profession, in particular, the benefits of their ripe experience and to promote interest in science by illuminating subjects from all sides. One of the medical subjects relating to accident insurance, for instance, was treated in turn by a psychiatrist, a neurologist, a gynecologist, and a surgeon. The principal medical themes discussed in the joint meetings of the medical and surgical sections were "Operative Treatment of Brain and Spinal Cord Affections;" "Position of Human Stomach;" "Achievements of Modern Research on Syphilis," and "Epidemic Cerebrospinal Meningitis," all presented by from 4 to 6 speakers, each from a different standpoint. In one of the two general sessions Garré described the present status of transplantation in surgery, reporting much original and pioneer work; Spemann did the same for embryonal transplantation, and Korschelt for transplantation and regeneration in the animal kingdom in general. A number of national societies, such as that for pediatrics, for history of medicine, for pathology, for legal medicine, for neurology and for urology, hold their annual meetings in connection with the "Naturforscher" congress. The king of Württemburg presided at the opening of the congress and threw open the doors of the opera house for a gala performance of the "Barber of Seville." Many of the members took advantage of the excursions to Tübingen to become better acquainted with this rather out-of-the-way nest of able and vigorous scientific workers. An editorial in the *Deutsche med. Wochschr.* remarks that the Naturforscher congress, or something of the kind, to keep the various specialties from drifting too far apart and too far from the fundamentals of all specialties, would have to be invented if it did not already exist. It affords a gathering place for those men whose interest is not exhausted by the study of separate single questions, but who strive to keep in touch with science at large. The congress next year will convene at Dresden, with Naunyn in the chair, during the last half of September.

Second International Congress on School Hygiene.—THE JOURNAL gave a brief description of the important First International Congress on School Hygiene, which proved very successful and far-reaching in its effects. The second international gathering of the kind is to be held in London, Aug. 5 to 10, 1907, and the official preliminary announcemnt has just been received through diplomatic channels. The success of the congress is already ensured by the prominence and enthusiasm of those promoting it, and by the patronage of the king; Sir Lauder Brunton is president, and the 53 men on the permanent international committee are leaders in medicine, hygiene or pedagogy the world around. There are four Americans on the list, President N. M. Butler of Columbia University, President G. Stanley Hall of Clark University, Prof. W. T. Porter, M.D., of Harvard, and Professor Bergstrom of Indiana University. The recent death of Herman Cohn removes from the list one of the most zealous workers for hygiene in the schools. The preliminary announcement says in regard to the first congress:

> One of the happiest results of the Nuremberg Congress was that teachers, medical men, architects, engineers, administrators, officials and manufacturers appreciated how intimately their work and duties were correlated, and also learned how greatly each was indebted to the other and the interests of all served by promoting the congress. One of the aims of the congress was to coördinate the efforts of these various workers and to aid each separate investigator to enjoy results and experiences collected from wide areas and great populations under the most diversified conditions of race, town, country, climate and social condition.

The officers of the congress appeal for active coöperation in the preparations for the congress, emphasizing the vast importance of hygiene of body and mind in the schools as one of the most potent factors in the vigor, happiness and prosperity of a nation. They state:

> The first step to be taken is the formation of a local committee for each particular town or district, which committee should approach the authorities of the education department and the treasury, the leaders of educational movements in town or country, the presidents or chairmen of educational committees, teachers of experience, philanthropists who are interested in educational movements, and medical men who have experience in treating children, engineers and architects, and any other citizens whose assistance would be desirable.
>
> This committee, when formed, should report forthwith to the London bureau the name and address of the chairman and secretaries. These local committees will be coördinated from London under national committees. Their aim should be to do all in their power to promote the success of the congress by diffusing information, by letters, circulars or announcements in special and technical journals, and by press notices. They should also endeavor to obtain the coöperation and support of governments, municipal or educational authorities, and committees of institutes and societies, and induce them to participate by delegating representatives to the congress or by sending representative exhibits of local interest or manufacture, or scientific appliances or inventions to the school of hygiene exhibition which is to be arranged.
>
> Contributions are invited from the representatives of governments or societies, or from individuals. Suggestions are requested at once for the general discussions. The subjects will be announced early, so that there will be time for collective investigation and observation. The first program, with a list of the various national committees, the subjects of reference for general discussion, and details as to the arrangements of the congress, will be issued early in 1907. The subscription for membership is $5 for America. All communications relating to the school hygiene exhibition, which will be arranged in conjunction with the Royal Sanitary Institute, should be directed to the secretary of that institute, Margaret Street, London, W. Other correspondence should be addressed to Dr. James Kerr, general secretary, Parkes Museum, London, W., England.

Fourth International Congress of Insurance Examiners.—This congress convened at Berlin, September 11-15, with a large attendance. The questions that aroused most interest were tuberculosis, accidents and internal affections, syphilis and alcohol, in their relations to life insurance. The alcohol problem was finally dismissed with the adoption of a resolution that no discrimination should be made between drinkers and abstainers, but that persons employed in positions which expose them particularly to danger of intemperance, such as waiters, barkeepers, persons employed in hotels, and the like, must pay an extra premium. The necessity was pointed out for paying special attention to the heart functioning and the blood pressure in passing on an obese applicant. It was proposed to collect statistics in regard to the obese insured, noting their manner of life, their diet and consumption of alcohol. The presiding officer, Florschütz of Gotha, presented statistics from the great Gotha life insurance company which showed the ultimate fate of 1,428 healthy persons insured in the society, in comparison with 1,428 persons who were healthy when first insured but who had had a parent or brother or sister die recently from tuberculosis. The chest measure of the persons in the latter group was considerably less than that in the first group, with a still greater difference in regard to their waist measure and their weight. It was also noticed that those in the second group did not seem to grow stronger with increasing age, like those in the other group. In the second group 36 per cent. had a tuberculous family history; in the first group, 17.7 per cent. The lessons learned from these figures have been heeded by the company to such good effect that the mortality from tuberculosis among their insured has dropped from 107 per cent. in 1867-1880 to 86 per cent. in 1881-1895. The mortality in the two groups of 1,428 each was 12 per cent. of the total mortality in the first group, and 24 per cent. among those in the second group. Poels of Brussels stated that he had kept track of all the candidates rejected by a Belgian insurance company on account of suspicion of tuberculosis, and had noticed that the mortality had been exceptionally high among them, confirming the judgment of the examiners. Martius remarked that the examiner must individualize each case, whether he thinks that the old diagnostic measures are sufficient or supplements them by Freund's sign of premature rigidity of the superior aperture of the thorax, Rothschild's sign of the early ossification of the sternal angle, Stiller's floating rib, or draws modern serology to his aid. The family tendency to tuberculosis must be considered as higher the greater the number of relatives affected. Also if the applicant is the only child or one of two, if the other children have succumbed young to infectious diseases. In regard to the influencing of an internal affection by an accident, Feilchenfeld of Berlin urged the examiner always to ask himself these seven questions: 1. Did the accident cause the internal affection? 2. Did the internal affection cause the accident? 3. Has the accident roused

up a latent internal affection? 4. Has the accident aggravated the internal affection? 5. Has the internal affection aggravated the effects of the accident? 6. Has the accident had any influence at all on the internal affection? 7. Is it possible to decide the actual relations between the accident and the internal affection? By weighing these points the examiner will be less liable to lay undue stress on either the accident or the internal affection. In answering the questions it is well to separate all internal affections into four groups, the periodically recurring (like gallstones), the constitutional and affections of certain organs with an insidious course, especially the heart, kidneys and spinal cord. The possibility of a traumatic origin is generally conceded in this group. The fourth group comprises the constitutional diseases such as syphilis or tuberculosis, with a local lesion developing at the point of the injury. The next group includes the chronic internal affections which—aggravated by the accident—first make themselves manifest after it, such as the functional neuroses, apoplectic phenomena or hemorrhage from the lungs. Three points must also be borne in mind: to determine the accident (suddenness, and physical as well as psychic stress); to determine whether the accident affected parts in the vicinity of the internal affection, and to determine the continuity of the symptoms (scientific basis for the assumption of a time connection between accident and internal affection). What he calls "indemnity hysteria" he likened to querulent mania, a disturbance of the mind resulting from the accident with a tendency to paranoia. The most successful cure is to refuse all indemnity absolutely or to give the patient a lump sum. In regard to syphilis Tiselius stated that he had found an excess of 75.6 to 28.5 per cent. in the mortality of syphilitics insured in 9 Scandinavian and 17 English insurance companies. On his recommendation all the Swedish companies arbitrarily added five years to the age of all syphilitic candidates. Some speakers stated that the importance of syphilis had been underestimated hitherto, but others insisted that the kernel of the whole matter lay in whether a thorough course of treatment had been taken (preferably the Fournier-Neisser methods). The congress adopted further a resolution urging effectual vaccination laws in all countries.

The *Deutsche med. Wochenschrift* for September 27 contains a full report of the congress. The next one will meet at Vienna in 1909.

LONDON LETTER.

(From Our Regular Correspondent.)

LONDON, Sept. 15, 1906.

Prosecution for Cruelty to a Child in Neglecting Medical Advice.

Cases in which parents have been indicted for manslaughter, because it has been shown at an inquest that a child has died who might have been saved by medical advice which they neglected to procure, are not uncommon. They often occur among the "peculiar people," "Christian scientists" and other cranks, who believe that it is wrong to seek medical aid. But no case like the following has ever occurred before in this country, in which a parent was prosecuted for failing to have an operation performed on a child. A woman was summoned by the National Society for the Prevention of Cruelty to Children for neglecting her son, a boy aged 8. He was a cripple and had been operated on four times in Guy's Hospital when he came under the notice of the society in December, 1905. In August he was examined by a physician, and an officer of the society subsequently read to the mother a certificate given by the physician stating that the boy was suffering from a necrosis of the left thigh bone and that an operation was necessary to save limb and possibly the child's life. The mother refused to have the operation performed and declared that she would continue to use a much advertised proprietary ointment which she said was making the child better. In cross-examination, the physician admitted that the child had been well cared for. The magistrate said that before the society had taken these proceedings they should have called in a specialist, from whom a mother was entitled to know whether a fifth operation was necessary. The magistrate dismissed the case, but refused to allow costs to the defendant because that would be assuming that she was altogether right.

Diet Values.

In the sections of physiology and chemistry of the recent meeting of the British Association for the Advancement of Science, held at York, an important joint discussion took place on the factors which determine minimal diet values. Dr. F. Gowland Hopkins, who introduced the subject, said that the animal, and especially the human body, is capable of astonishing degrees of adjustment in respect to food. Therefore, so far as immediate results are concerned, it is not easy to observe the effects of variations in diet values. Again, it was difficult to estimate the quality of different human employments in respect of energy expended. Voit has determined that for the average body under average conditions the standard for moderate work was 3,050 calories and 118 gm. of proteid. Professor Attwater increased these figures to 3,500 and 125, respectively, while Professor Chittenden has reduced them to 2,600 and 55. There is nothing in Chittenden's results to show that Voit's standard is too high, for the body can largely adjust itself to circumstances. Experiments have shown that this adjustment is of a fundamental sort. The work of the internal organs requires expenditure of more energy than has been supposed. A small diminution of food from the ordinary quantity taken by a person results in no loss of power, but produces a loss of vivacity or what the Americans called "snap." This illustrated the fact that the total caloric value expended is not all used usefully, but a good deal superfluously. Another important point is that the form of the proteid is of importance.

Death from Eating Icecream.

An inquest was held on the body of a child, a girl, aged 8. She had eaten some icecream wafers bought from an Italian in the street, and died on the following day. The physician who attended her said that death was due to diarrhea from eating icecream, probably made under insanitary conditions. The health officer examined the premises where the icecream was made and found in the utensil in which the icecream was made corners and angles containing fermenting and decomposing milk. He said that there had been many cases of ptomaine poisoning in the district and that many children had died after eating icecream. The vendor was fined $4 and costs.

LONDON, Sept. 22, 1906.

The London County Council and Street Refuse.

The London County council has passed some very drastic by-laws as regards street refuse, which are as follows: No person shall (1) sweep or otherwise remove from any shop, house or vehicle into any street any waste paper, shavings or other refuse, or being a costermonger, news vendor or other street trader, throw down and leave in any street any waste paper, shavings or other refuse; (2) throw down and leave in any street for the purpose of advertising, any bill, placard or other substance; (3) throw down and leave in any street, any bill, placard or other paper which shall have been torn off from any bill posting station. No person shall deposit in any street or public place, to the danger of any passenger, the rind of any orange, banana or other fruit, or the leaves or refuse of any vegetable. No person shall throw, place or leave any bottle or any broken glass, nail or other sharp substance (not being road material) on or in any street or public place in such a position as to be likely to cause injury to passengers or animals or damage to property. Any person who shall offend against any of these by-laws shall be liable for each offense to a fine not exceeding $10.

Prof. Ronald Ross' Investigation of Malaria in Greece.

At a luncheon given to Professor Savas of the University of Athens, at the University Club, Liverpool, Prof. Ronald Ross dealt with the subject of malaria in Greece. He said that at the request of the Lake Copias Company the Liverpool school had investigated the prevalence of malaria in Greece. He went out to that country in May, 1906, and found a very serious state of affairs. The population was practically confined to the valleys, the mountains being uninhabitable. In these valleys he found a good deal of malaria. The statistics of the country showed that in a population of two and one-half millions there were 250,000 cases of malaria every year, of which 1,760 were fatal. Last year the number of cases increased to 960,000 and the deaths to 5,916. Malaria is checking the development of rural life in Greece and is a very serious thing for the nation. Professor Ross is of the opinion that it was malaria which checked the life of ancient Greece and that the disease was introduced, or at all events reinforced, at the time that natives of Asia were brought into the country. He commended the movement initiated by Professor Savas for dealing with malaria. The latter delivered a brief address in which he thanked the Liverpool School of Tropical Medicine for their efforts on behalf of Greece.

Race Failure and Race Suicide.

At the annual congress of the Sanitary Inspectors' Association, Sir James Crichton Brown delivered an eloquent address dealing with this and other subjects. He pointed out that there

is a close relation between undesirable social conditions and a high birth rate. The wives in the districts of least prosperity and culture have the largest families and the morally and socially lower classes are reproducing with the greatest rapidity. Thus the birth rate in towns inhabited by the affluent varies from 15 to 20 per 1,000, while in manufacturing towns it varies from 35 to 39. At present we are confronted with a reduced fertility in the more intellectual, more cultured, more prosperous, more thrifty and more cleanly classes of the community, which can not be accounted for by the variation in the mean age of the possibly productive wives. This decline must be ascribed to physical degeneration or to the wilful and systematic prevention of child bearing, race failure or suicide.

The Gospel of Recreation.

Turning to another subject, the president remarked that over-fatigue is one of the great dangers of the day, and that the ease by which it is induced is perhaps one of the signs of degeneracy. The tough old blades, who did not know they had a liver or appendix and never went a mile from home except to earn a little money, are all but extinct, and it has become the duty of every physician from time to time to preach the gospel of recreation. The struggle to acquire property, to win applause, to earn bread is fiercer than ever. The pressure of labor has been transferred from the muscles to the nervous system, for physical energy is supplied by steam and electricity, and it is nerve energy that is needed to control machinery. The indications, he said, are that the nerve tissue that supplies energy is more easily exhausted than it used to be. An evil of the present day is forcing the pace of labor. "Rushing" is finding its way to Great Britain. According to Professor Oliver, he said, it is beginning to show its injurious effects at the northeastern ports. The riveters paid by the piece work so strenuously that at the end of a week of the usual number of working hours they are practically exhausted and are compelled to take an extended rest, and many spend Saturday afternoons in bed. Professor James of Harvard, he said, affirmed that Americans show in their countenances intensity, rapidity, vivacity and a "bottled-lightning expression," very different from the stolid cheeks, codfish eyes, and slow inanimate demeanor seen in the British Isles. Notwithstanding the codfish eyes, there is in Great Britain an increase of nervousness, and the word neuasthenia, unknown to Webster, is daily on every physician's lips. Innumerable hard workers suffer in the course of their work from nervous depression in its protean shapes—from "morning tire," as it is termed, from morbid irritability, from listlessness and inability to fix attention, from apathy and langor, from anomalous sensations and strange fancies, from headaches and prostration, from tremors and baseless apprehensions, from despondency and weariness of life. These occurring during arduous work, show that recreation is necesary. The love of Nature and an appreciation of its healing power appeared to be increasing among the working and middle classes, while they appear to be dying out among the affluent. The latter still gather in choice regions of natural beauty, but they approach them from the big hotel or bathing establishment or saline spring point of view and not from the Wordsworthian. Absorbed in bridge and golf, "the harvest of the quiet eye" no longer delights them. Rapid locomotion is the craze, which involves blindness to natural beauty, motoring being in relation to scenery what bolting is in relation to food. With all its faults, the newspaper is one of the bulwarks of society of the present epoch. It is the antidote to corroding egotism; it gives world-wide horizon to the purblind and short-sighted. It thrills the torpid nerves like a Faradic current; it plays in turn on the whole keyboard of human temperament.

LONDON, Sept. 29, 1906.

Extraordinary Case of Morphin Poisoning.

An inquest was held at Brighton on a man, aged 43, who had died from an overdose of morphin. He had lived in China, where he acquired the morphin habit, and accustomed himself to very large doses. He used to take as much as 60 grains in the day. By means of a telegram and affixing the title "doctor" to his name he obtained two gross of pills, each containing two grains of morphin. He took this enormous quantity within twenty-four hours, and two hours before death he swallowed 100 of the pills. After a period of excitement, paralysis of the respiratory center ensued and ended fatally. The symptoms were of a tetanic character and the usual comatose state did not develop.

Mischief Wrought by Antivaccinationists.

The report of the medical department of the local government board for 1904-5 contains an account of a smallpox epidemic in the union of Dewsbury. The board of guardians have set themselves up as systematic opponents of vaccination and refused to discharge their duties with regard to it. At the same time the surrounding sanitary authorities have been remiss in providing hospital accommodation for dealing with the inevitable consequences. For many years outbreaks of smallpox have occurred from time to time in Dewsbury. In 1892 there were 272 cases and 45 deaths; in 1903, 240 cases and 17 deaths; in 1904, up to September 14, there had been 260 cases, and Dr. Wheaton, who was sent down to report, found that the epidemic was fast passing beyond the control of the sanitary authorities. The town smallpox hospital was overfull and its administration was completely disorganized, while no provision could be made for the numerous cases occurring in the surrounding districts. At Dewsbury there was no efficient disinfection of the clothing of "contacts" and no provision for the reception of people from infected houses while these were being disinfected. For lack of hospital accommodation smallpox patients were being kept in their own homes while their families were maintained in quarantine at the expense of the authorities. Nurses had not been provided and convalescents were in attendance on the sick. The conditions arising when several cases of smallpox occurred in the same house were such as would hardly be thought possible in a civilized country. In one small bedroom Dr. Wheaton found three adults suffering from smallpox, and a healthy woman occupied the same bed as a woman suffering from the disease. Finding the guardians utterly impracticable, the local government board conferred the necessary powers on the Dewsbury town council, by whose prompt action as a vaccination authority the plague was shortly stayed. But in the year ending March 25, 1905, 1,600 cases of smallpox occurred in the sanitary districts comprised within the unvaccinated Dewsbury union. These cost the authorities $100,000.

The Sanitary Condition of India.

The annual report of the sanitary commissioners of the government of India for 1904 shows that the chief causes of death of the European army in India were as usual, typhoid fever and abscess of the liver, the former accounting for 34 and the latter for 12 per cent. of the deaths. The returns made with regard to malaria are much more minute than formerly. The different forms of the disease have been classified and an account given of the occurrence of the anopheles at the respective stations, the measures directed against them, and the prevalence of malaria among the natives as judged by the examination of the blood of children under the age of 10. One result of this more complete investigation is to show that the benign form of malaria greatly preponderates over the malignant varieties. No less than 89 per cent. of cases belong to the former class. It has also been found that a large proportion of the admissions were not new infections, but readmissions, pointing to the necessity of a liberal use of quinin both for treatment and prophylaxis. With regard to typhoid fever it has been found that there are limitations to the rôle played by the drinking of water in its dissemination and that there are other modes of infection, notably infection by contact, in which the method of transmission may be by the infective material being taken up on the fingers either from the soiled body of the patient or from the bed clothes or utensils used by him. Infected milk and raw vegetables also play their part, while flies are evident agents of propagation. Favorable conclusions of Major Leishman as to the efficacy of antityphoid inoculations are narrated.

Return Cases of Scarlet Fever and Diphtheria.

The Metropolitan Asylums Board has recently issued a report by Dr. F. M. Turner on all the return cases of scarlet fever and diphtheria reported during the years 1902, 1903 and 1904. The total number of patients sent home from the hospitals after attacks of primary scarlet fever was 35,516, and the percentage of outbreaks following the discharges was 3.27. Dr. Turner thinks that not more than one in ten of the alleged return cases can be regarded as coincidental, the remainder being due to the arrival of the patient from hospital. He confirms the view that there is little, if any, connection between post-scarlatinal desquamation and infectivity. As to nasal discharge, he finds that the cases in which this is present show an infectivity rate of 2 per cent., against 1.5 for the whole series.

Pharmacology

Tyree's Antiseptic Powder.

REPORT OF THE COUNCIL ON PHARMACY AND CHEMISTRY.

Tyree's antiseptic powder was assigned for examination to a subcommittee of the Council, which made the following report:

To the Council on Pharmacy and Chemistry: Your subcommittee, to whom was assigned Tyree's Pulv. Antiseptic Comp., marketed by J. S. Tyree, Washington, D. C., reports as follows:

The label on the package states: "This preparation is a scientific combination of borate of sodium, alumen, carbolic acid, glycerin and the crystallized principles of thyme, eucalyptus, gaultheria and mentha, in the form of a powder," etc.

The statement that the powder contains the crystalline principles of thyme, eucalyptus, gaultheria and mentha is vague and misleading, since the chief medical constituents of eucalyptus and gaultheria are liquids, but it tends to convey the impression that the powder contains the essential constituents of these drugs, namely, thymol, oil of eucalyptus or eucalyptol, oil of wintergreen, or methyl salicylate, and menthol.

The literature supplied to physicians *claims* its composition to be: "Parts, sod. bor., 50; alumen, 50; ac. carbol., 5; glycerin, 5; the cryst. principles of thyme, 5; eucalyptus, 5; gaultheria, 5, and mentha, 5."

The composition, therefore, might be expressed as follows:

Sodium borate (borax)	50 parts, or	38.46 per cent.
Alum	50 parts, or	38.46 per cent.
Phenol (carbolic acid)	5 parts, or	3.85 per cent.
Glycerin	5 parts, or	3.85 per cent.
Thymol	5 parts, or	3.85 per cent.
Oil of eucalyptus or eucalyptol	5 parts, or	3.85 per cent.
Oil of gaultheria (or methyl salicylate)	5 parts, or	3.85 per cent.
Menthol	5 parts, or	3.85 per cent.

Analysis of specimens purchased from different sources in the open market were made under our direction. The reports of the chemists show that Tyree's antiseptic powder contains no borax, or mere traces only, and that it contains no alum, or mere traces only. Instead, the analyses show that boric acid and zinc sulphate are the essential constituents. The amounts of carbolic acid, thymol, menthol, etc., contained in the powder, if present, were far below the quantities indicated by the formula. The presence of glycerin could not be demonstrated, and if present the amount must be very small.

One chemist reports:

The result of analysis shows that different samples differ slightly in composition, but that the following indicates the average composition of the product.

	Per cent.
Zinc sulphate, anhydrous	15.56
Boric acid	81.26
Volatile matter at 100° C. for four hours	0.45

The undetermined portion consists of salicylic acid, carbolic acid, menthol and eucalyptol; possibly other antiseptic agents may be present in very minute quantities.

From the above findings we conclude that Tyree's antiseptic powder is a mixture of boric acid and dried zinc sulphate and antiseptic bodies, such as menthol, salicylic acid and carbolic acid, eucalyptol, etc. From this it can be readily seen that the label which is supposed to set forth the composition of Tyree's antiseptic powder is not in accord with the facts. The powder does not contain either borate of sodium or alum, and the presence of glycerin could not be established. The antiseptic agents, exclusive of the boric acid, are present only in small amounts.

The report of another analyst concludes as follows:

It evidently contains less than the amount stated of the principles of thyme, eucalyptus, wintergreen and mint. It also contains a very small amount indeed of carbolic acid, much less than that stated. We have been unable to identify certainly the presence of glycerin, and it is doubtful if it be present.

From the result of the analysis we feel confident that the preparation is to all intents and purposes a mixture of boric acid and sulphate of zinc.

The carbolic acid, thyme, eucalyptus, wintergreen, etc., if present, are present only in sufficient amount to give the compound a satisfactory odor.

In view of the fact that J. S. Tyree has given wide publicity to a formula which the preceding report has shown to be a deliberate misrepresentation of facts, it is recommended that the article be refused recognition by the Council on Pharmacy and Chemistry, and that this report be published in THE JOURNAL of the American Medical Association.

The recommendation of the subcommittee was adopted by the Council in accordance with which the report is published.

W. A. PUCKNER, Secretary.

The following correspondence is reproduced as it bears on the above:

WASHINGTON, D.C., Oct. 4, 1906.

DR. G. H. SIMMONS, Chicago.

Dear Doctor:—Dr. L. T. Kebler, chemist to the drug department of the Agricultural Bureau, at Washington, D. C., requested me over the telephone this morning, to repeat in part to you a conversation which passed between the doctor and myself a few weeks ago. I know of no reason why I should comply with this request except as a courtesy to the doctor, for certainly I am under neither moral or financial obligations to you or THE JOURNAL of the American Medical Association.

As I remember the conversation, I stated to the doctor that it was and had been my intention on or about the first of February to state my reasons to the medical profession for changing the formula of Tyree's antiseptic powder from an alum and borax base to a boracic and zinc base. This was done a short time ago at the suggestion of several prominent gentlemen who were connected with hospital clinics on venereal, nose and throat and other similar conditions, that the powder might cover a broader and more useful field, and again, we found that the concentrated form of alum used in the manufacture of Tyree's antiseptic powder was unsuitable for all cases. I further stated to the doctor that I had in contemplation the omission from the label of the various conditions to which this preparation was applicable, for the reason that one purchasing it for a gargle and spray would not care to see the other objectional diseases mentioned.

The proportional formula of this preparation has never been kept a secret from the respectable members of the medical profession, but it has been refused from time to time to be divulged literally to unscrupulous members of the profession, as well as to business representatives of medical and drug publications. The primary difference in connection with the formula to Dr. Kebler was that I stated on my label that the preparation represented in one hundred parts, one hundred and thirty parts, but after explaining to the doctor that after dehydrating the borax and alum and the loss in trituration and boxing, that in reality we obtained less than one hundred parts. The doctor further raised a point concerning the mention of glycerin on the label. This was explained that the glycerin was added to the carbolic acid instead of water that it might be held in a more permanent and satisfactory solution.

I believe these were the major points that the doctor dwelt upon, which, after my explanation covering his enquiries, seemed to be entirely satisfactory. Truly yours, J. S. TYREE.

CHICAGO, Oct. 9, 1906.

MR. J. S. TYREE, Washington, D. C.

Dear Sir:—Your letter of the 4th instant has been received. In this you state that Dr. Kebler of the Drug Laboratory requested you over the telephone to repeat a conversation which passed between you and him some weeks ago. You then say: "I know of no reason why I should comply with this request, except as a courtesy to the doctor, for certainly I am under neither moral or financial obligations to you or THE JOURNAL of the American Medical Association."

Under these circumstances I do not understand why you have written to me. However, while you are under neither moral nor financial obligations to me or to THE JOURNAL, I do believe that you are under obligations to physicians to tell them the truth regarding a preparation you are asking them to prescribe.

According to your letter, you have radically changed the ingredients of your powder, and it seems to me that it would have been only fair and just to let physicians who are using this powder know of the change you had made. In the circular which you send with your letter, the old formula still appears.

Very truly yours, G. H. SIMMONS.

The foregoing letter shows that Mr. Tyree assumes the right to sell to physicians a preparation with a descriptive formula which he acknowledges is false, and that he presumes to use his own pleasure as to the time when he will inform them of its true composition.

Mr. Tyree does not state when he changed the formula. We do not know whether it was a year ago, five years ago or ten years ago, but we do know that the package which was used in making the first analysis was purchased as early as last February, and the first chemist's report was submitted to the Council March 5, 1906. On April 4 Mr. Tyree was notified by the Council that the composition of "Tyree's Antiseptic Powder" did not correspond with the formula published by him.

Whether or not Mr. Tyree is justified in offering our profession a preparation as composed chiefly of borax and alum when in reality it is chiefly composed of boric acid and zinc sulphate, we leave physicians to judge.

Individual Diet.—While the classification of foods according to their chemical composition is of great value, the clinician knows full well that it requires an art to apply these facts in practice; in other words, articles of diet must be individualized, just as drugs are.—*Medical Times.*

Miscellany

Beriberi and Uncinaria.—At the séance of the Acad. des Sciences, Paris, June 5, 1906 (*Progrès. Méd.* 3d. Series, Vol. xxii, June 16), M. F. Noc reported some facts concerning beriberi, observed in the native hospital at Choquin, near Saigon, French Cochin China. In 77 cases of beriberi in Chinese and Annamites, he found in 74 examinations great number of the eggs of *Uncinaria americana* (Stiles) in the dejections, and he also found them in 17 out of 82 Annamites, themselves unaffected but living among those who were. On the other hand, he failed to discover it in the dejections of 31 Europeans suffering with various bowel disorders, diarrhea, dysentery, etc. He remarked that some of the symptoms described by Stiles as occurring in American uncinariasis, such as edema of the face and limbs, dropsy, nervous troubles, are also present in beriberi. In the autopsies of those succumbing to the disease he always found the lesions of gastroduodenitis, and whenever a hemorrhagic puncture was observed in the neighborhood of the pylorus, a careful search showed the uncinaria. The thymol treatment, moreover, by expelling the parasite, ameliorated the symptoms of beriberi with surprising rapidity. From all these facts he has been led to think that this hookworm plays a notable part in the etiology of beriberi.

Lumbar Puncture in Diagnosis.—L. Merzbacher, *Rivista di Patologia nervosa e mentale*, xi, May, 1906, finds from his study of the subject that the diagnostic points of value in lumbar puncture in organic diseases of the nervous centers are practically as follows: In every case of paresis there is a marked lymphocytosis, and in the majority of cases a significant increase of albumin. In tabes there is usually a marked lymphocytosis without any concomitant increase of albumin. Syphilitic infection of the organism causes in most cases (80 per cent., according to his observation) a notable increase of lymphocytes, but not of albumin. Inflammatory meningitis is accompanied by lymphocytosis, but not so the chronic hyperplastic meningitis. Psychoses lacking syphilitic antecedents are not accompanied by lymphocytosis, and in the present state of our knowledge, lymphocytosis can be considered as the most constant and early symptom of paresis and tabes. In the case of paresis the increase of albumin is also significant.

The Spirochaeta Pallida and Paresis.—G. Catola (*Riv. di Patologia Nervosa e Mentale* XI, fasc. 5, May, 1906), has examined the tissues of five paretics for Schaudinn's spirochaeta, using the method of Levaditi and that of Cajal with fixation in ammoniacal alcohol. He examined all the thoracic and abdominal viscera, the muscles, the lymphatic glands, the brain cortex and the cerebrospinal meninges, especially those parts showing opacity or thickening, and making hundreds of sections, but all with negative result. The blood and cerebrospinal fluid were not examined during life. His results, taken with those of Marinesco and Minea, reported to the Neurological Society of Paris, April 6, in which they had only negative results from the examination in tabes and paresis, lead him to conclude that progressive paresis is not due directly to the organism and is not, therefore, to be considered as a syndrome recognizing also the value of inoculation experiments.

Gastric Tumors in Furnituremakers.—If a cabinetmaker gets the habit of drinking the polishing fluid, as sometimes happens, the shellac is liable to accumulate in his stomach. Two concrements, each as large as a fist, were recently removed from the stomach of a cabinetmaker at Bonn, and Bier remarked on the case (*Med. Klinik*) that an exceptionally movable tumor in the stomach of any one practicing this trade should always suggest the possibility of an accumulation of shellac.

Improved Technic of Radioscopic Examination of the Esophagus.—Instead of having the patient ingest a suspension of bismuth in milk or water, Holzknecht, of Vienna (*Wien. klin. Wochsh.*), mixes the bismuth with some sticky, tenacious porridge, which is hard to swallow and sticks along the sides of the esophagus. The shadow cast by the bismuth is much more instructive than when it is taken in a more fluid suspension

Book Notices

TAHITI, THE ISLAND PARADISE. By Nicholas Senn, M.D., Ph.D., LL.D., C.M., Professor of Surgery in the University of Chicago, etc. Cloth. Fifty Illustrations. Price, $1.50. Chicago: W. B. Conkey Company, 1906.

Dr. Senn in recent years has become a traveler and a writer on travels. He has journeyed practically over the whole world, seldom going over the beaten paths, but selecting for his excursions the unknown or little known parts of the earth. In traveling he has seen things, kept his eyes open, and has written interestingly of what he has seen. His description of his travels, as our readers know—for several series of his articles have appeared in THE JOURNAL—are not only interesting but also instructive. Usually his writings have been from the viewpoint of the physician and for the edification of physicians, but occasionally he writes from the standpoint of a layman for laymen. The book before us is written for the public, although the medical aspect of the subject is not neglected.

"Tahiti, the Island Paradise," is not a book of travels, but a description of what the author calls the gem of the southern Pacific, and a history of its people. It is one of the Society Islands, an archipelago in the southern Pacific Ocean, about 3,600 miles south by southwest from San Francisco.. It is not pretentious as to size, since it is only about 35 miles in length by, on an average, 12 miles in width. But what it lacks in size it makes up in a thousand and one attractive features. Not the least of these is that no one is compelled to work; it is the only place in the world, according to Dr. Senn, where the inhabitants are not obliged to labor for their daily bread. Certainly Nature has been very generous in providing for the wants of the Tahitans. The climate is delightful all the year round, and the island has a never-fading verdure and a vigorous vegetation. The bread fruit tree furnishes the principal part of the food for the indolent among the inhabitants. Manioc is another of Nature's gifts that may take the place of bread, and the cocoanut furnishes a good substitute for meat.

Until visited by Europeans Tahiti must have been a Garden of Eden, but so-called civilization has played havoc with its people. In 1767, when Captain Cook first visited the island, the population is supposed to have numbered some 200,000, whereas the last census shows only about 11,000, the result, in great part at least, of the diseases introduced by Europeans.

Several chapters are devoted to the history of the people, but this history is full of romance, but at the same time of pathos and tragedy. The book is well worth reading, not only for the information it contains regarding a beautiful island seldom heard of and of a people who are living in a little world by themselves, but because the author has given us a book that from cover to cover is readable and interesting. In some of his descriptions Dr. Senn is often poetic, and always enthusiastic when speaking of the beauty and natural attractions of Tahiti. He indulges a little too freely in quotations, classical and otherwise; so much so, we fear, as to occasionally tend to detract from one's interest in reading. The book is well illustrated.

TEXT-BOOK OF MEDICAL JURISPRUDENCE AND TOXICOLOGY. By J. J. Reese, M.D., Late Professor of Medical Jurisprudence and Toxicology in the University of Pennsylvania. Seventh edition. Revised by H. Leffman, A.M., M.D., Professor of Chemistry and Toxicology in the Woman's Medical College of Pennsylvania. Cloth. Pp. 656. Price, $3.00 net. Philadelphia: P. Blakiston's Son & Co., 1906.

The seventh edition of this valuable text-book brings its subject matter well up to date, some of the more recent reports of cases in which modern exact methods of investigation were employed being given in considerable detail. Among the new matters introduced may be mentioned the application of *x*-rays to the study of the skeleton, a method that has direct bearing on the question of identification. The serum test for blood is fully described. Among new subjects introduced into toxicology are chronic poisoning by potassium chlorate, ace-

tanilid and carbon monoxid; acute poisoning by boric acid, resorcinol, wormseed and formaldehyd. The tests for poisons are given with clearness, without unnecessary detail. The subject of ptomains is given due consideration, with the result that the whole matter must be regarded as being, to a considerable extent, *sub judice*. While it is impossible in so small a book to give the detail that will be required by the expert medical jurist or toxicologist, this volume affords to the student and practitioner a reliable guide to a comprehensive view of this important subject.

Marriages

THOMAS L. RYAN, M.D., to Miss Marie Barrett, at Detroit.

M. ABI MASSOUD, M.D., to Miss Theo Gunn, at Stillmore, Ga., September 30.

EDWARD L. WHITNEY, M.D., to Miss Anna Hart Taylor, both of Baltimore, October 3.

M. D. CAMPBELL, M.D., Plumville, Pa., to Miss Mae Nichols of Scottdale, Pa., October 3.

FRANK B. EASTON, M.D., to Miss Lillian Louise Libby, both of Laconia, N. H., October 3.

SAMUEL HUME WATSON, M.D., to Miss Jane Shreeves of Blairstown, Iowa, October 10.

LOUIS HAMMAN, M.D., to Miss Mary Brereton Sharretts, both of Baltimore, October 10.

CHARLES K HUDSON, M.D., Gladewater, Texas, to Miss Edna Harris of Cincinnati, October 3.

HARRY B. GUDGELL, M.D., Hazleton, Ind., to Miss Emma Horrall of Princeton, Ind., October 4.

PATRICK F. KELLEHER, M.D., Cambridge, Mass., to Miss Margaret L. Linehan of Boston, recently.

GEORGE T. FLUKE, M.D., Altoona, Pa., to Miss Eleanor V. Regan of Philadelphia, September 26.

PAUL THOMAS SWETT, M.D., Hartford, Conn., to Miss Anna Cowan Poole of Baltimore, October 3.

WALTER A. CARR, M.D., Junction City, Kan., to Miss Effie Elizabeth King of Topeka, Kan., October 3.

ALEXANDER J. MCCANNEL, M.D., Minot, N. D., to Miss Carrie M. Graham of Forest River, N. D., recently.

CLAYTON ELMER BARTLETT, M.D., Hot Springs, Wash., to Miss Barbara Haecker of Milwaukee, October 3.

FRANCIS A. SEYMOUR, M.D., Los Angeles, Cal., to Mrs. Pauline Garner Curran of Santa Barbara, Cal., recently.

BENJAMIN JEROME SANDS, M.D., Port Chester, N. Y., to Miss Josephine Clark Wilson of Greenwich, Conn., October 10.

HENRY STUART PATTERSON, M.D., New York City, to Miss Charlotte Wise Hopkins of Washington, D. C., October 6.

WILLIAM PATTON MCDOWELL, M.D., Eufaula, Ala., to Miss Nealie Linsey Silvester, at South Norfolk, Va., October 10.

PHILIP EDWARD JOHNSON, M.D., New York City, to Mrs. Laura Hoadley Scarborough of New Brighton, S. I., October 2.

ROLAND C. HARRIS, M.D., Rochester, N. Y., to CLARA E. MOORE, M.D., of Syracuse, N. Y., at Averill Park, N. Y., October 2.

Deaths

George Atherton Spalding, M.D. College of Physicians and Surgeons in the City of New York, 1875; whose grandfather, a student at Guy's Hospital, London, was the first to bring to this country vaccine against smallpox and who came from a long line of distinguished ancestors, many of whom were in the medical profession; an alumnus of Yale University, and after his graduation in medicine for two years assistant to Dr. John C. Dalton, professor of physiology in his alma mater; an interne in St. Luke's Hospital in New York in 1875 and 1876, and later a general practitioner well known and highly esteemed; from 1879 to 1894 attending physician at the House of Refuge on Randall's Island, and from 1896 until the time of his death attending physician to St. Luke's Hospital; a member of the New York Academy of Medicine, Medical Society of the County of New York and Alumni Association of St. Luke's Hospital, died suddenly from heart disease, at his home in New York City, October 2, aged 57.

Arnold Plumer Gilmore, M.D. Jefferson Medical College, Philadelphia, 1874; formerly of Winona, Minn., but for more than 20 years a resident of Chicago, and a specialist on diseases of the eye and ear; president of the Columbus Safe Deposit Company, and one of the principal owners of the Columbus Memorial building; one of the members of the first board of trustees of the Sanitary District, died at his home in Chicago, October 10, from Bright's disease, after a long illness, aged 55.

Jerome B. Snyder, M.D. Chicago Medical College, 1864; a veteran of the Civil War; for two years a member of the city council, and for seven years president of the board of education of Polo, Ill.; United States examining surgeon for four years; a member of the Ogle County Medical Society, died at his home in Rowan, Iowa, September 29, after a long illness, from cancer of the stomach, aged 62.

Frederick Crang, M.D. College of Physicians and Surgeons, Keokuk, Iowa, 1877, who attended medical lectures in Glasgow, Scotland, and was also a licentiate of Apothecaries' Hall, London, and practiced in England for 20 years; for many years a minister of the Congregational Church, died at his home in Forest Grove, Ore., September 26, from arteriosclerosis, aged 84.

Emil Wilhelm Hoeber, M.D. New York University, New York City, 1876; a member of the Medical Society of the County of New York, and of the German Medical Society; coroner from 1894 to 1897, during the administration of Mayor Strong, and United States pension examining surgeon, died at his home in New York City, October 5, after a short illness, aged 73.

Charles Grimsley Elliott, M.D. Medical Department of Washington University, St. Louis, 1891; a pioneer physician of Oklahoma, and superintendent of the first territorial hospital for the insane, at Fort Supply, died in Blackwell, Okla., after a fall down the stairs of his office, September 30, aged 41. He had had organic heart disease for some time.

Crittenden E. Barnes, M.D. Rush Medical College, 1883; city physician of Burlington, Iowa, from 1887 to 1892; a member of the staff and of the executive board of St. Francis Hospital; house surgeon of the Chicago, Burlington & Quincy Hospital in 1883, died at his home in Burlington, September 30, after an illness of five years, aged 45.

George S. Armstrong, M.D. Toronto University Medical Faculty, 1879; a member of the American Medical Association; for many years physician of the Spokane Falls & Northern Railway, and one of the most widely known practitioners of Washington, died at his home in Corbin Park, Spokane, October 1, from nephritis, aged 48.

Minerva M. Greenway, M.D., C.M. Trinity University, Toronto, 1899, of Toronto; lecturer on diseases of women at the Woman's Medical College; secretary of the alumnæ association of that institution, died at St. Michael's Hospital, October 4, from typhoid fever, after an illness of 10 days.

Morse Stewart, M.D. Geneva (N. Y.) Medical College, 1841; one of the founders of Harper Hospital; said to have been the oldest practitioner of Detroit, Mich., where he had practiced constantly for 64 years, died suddenly at his home from cerebral hemorrhage, October 9, aged 88.

Guilford Dudley Elder, M.D. University of Michigan, Department of Medicine and Surgery, Ann Arbor, 1877; a veteran of the Civil War; a member of the McLean County (Ill.) Medical Society, died suddenly, October 1, at his home in Bloomington, from cerebral hemorrhage, aged 59.

Walcott Noble Griswold, M.D. Castleton (Vt.) Medical College, 1857; who had been suffering from malignant disease for several years, committed suicide by shooting himself through the head, in his room at the Hahnemann Hospital, San Francisco, October 4, aged 79.

John W. Dryer, M.D. Milwaukee Medical College, 1901; twice president of the alumni association of his college, and a practitioner of Milwaukee, died at his father's home in Reedsburg, Wis., from laryngeal tuberculosis, after an illness of two years, aged 40.

Marie E. Frahm, M.D. Northwestern University, Woman's Medical School, Chicago, 1899; formerly a practitioner of Mattoon, died at her home in Tuscola, Ill., September 30, from cerebral hemorrhage, after an illness of one week, aged about 30.

Guy Dudley Hoag, M.D. Bellevue Hospital Medical College, New York City, 1897; a member of the Lawrence County (Pa.) Medical Society and the Physicians' Club, died at his home in Newcastle, Pa., October 6, from tuberculosis, aged 31.

C. P. Allen, M.D. Nashville (Tenn.) Medical College, 1857, died at his home in Sharon, Tenn., September 23, aged 72.

William H. **Shackford, M.D.** College of Physicians and Surgeons, Baltimore, 1871, died at his home in Roanoke, Va., October 4, from concussion of the brain, due to an accident a week before, when a bale of hay fell on him, aged 49.

Thomas J. **Scott, M.D.** New Orleans School of Medicine, 1860; a resident of Alvin, Texas; for several years local surgeon for the Gulf, Colorado & Santa Fe Railway, was found drowned in Galveston Bay, October 1, aged 68.

Francis M. **Smallwood, M.D.** Kentucky School of Medicine, Louisville, 1887; of Chillicothe, Ohio; at one time health officer, died recently at his home in that city from paralysis, after an illness of two years, aged 48.

H. G. **Van Sandt** (Years of Practice, Illinois), a veteran of the Civil War, a trustee of the Illinois State Normal School, Charleston, died at his home in Montrose, Ill., September 21, from cerebral hemorrhage, aged 63.

Victor **Haischer, M.D.** College of Medicine, Syracuse (N. Y.) University, 1905; an interne in the Hospital of the Good Shepherd, Syracuse, died suddenly at that institution, September 24, from acute nephritis, aged 25.

Harvey R. **Winchell, M.D.** State University of Iowa, Homeopathic Medical Department, Iowa City, 1882, died at his home in Rich Hill, Mo., September 29, from heart disease, after a short illness, aged 70.

Andrew M. **Jones, M.D.** Jefferson Medical College, Philadelphia, 1869; formerly of Corydon, Ind., but of late a resident of Pine, Colo., died in Denver, October 1, from lung disease, after a long illness, aged 63.

Silas B. **Dickerman, M.D.** Hahnemann Medical College, Philadelphia, 1870; for a number of years a member of the school board, died at his home in Abington, Mass., October 1, after a prolonged illness, aged 57.

Charlotte Fitz **Gerald, M.D.** University of Michigan, Homeopathic Medical College, Ann Arbor, 1879, of Ann Arbor, died at the home of her sister in Plymouth, Mich., from heart disease, October 4, aged about 60.

Reuben H. **Baker, M.D.** Chicago Homeopathic Medical College, 1890, of Pearl City, Ill., died at St. Francis Hospital, Freeport, Ill., October 9, two days after an operation for appendicitis, aged 42.

Peter W. **Allen, M.D.** Medical College of Virginia, Richmond, 1869; a Confederate veteran, died at his home near Ford's Station, Va., October 7, from paralysis, after an illness of several months, aged 66.

R. Connelly **Church, M.D.** Medical Department of the University of Tennessee, Nashville, 1893; of Mountain City, Tenn., died October 11 from a gunshot wound, said to have been self-inflicted, aged 35.

Thomas Rockwell **Crittenden, M.D.** College of Physicians and Surgeons in the City of New York, 1849; the oldest practitioner of Dover, Del., died at his home in that city, September 27, aged 84.

Samuel R. **Sample, M.D.** Jefferson Medical College, Philadelphia, 1857; a veteran of the Civil War, died suddenly at his home in Intercourse, Pa., from heart disease, September 30, aged 72.

John **Pirnat, M.D.** Miami Medical College, Cincinnati, 1867; for almost 40 years a practitioner of Evansville, Ind., died at his home in that city, October 10, after an illness of one week, aged 63.

William Scott **Mullins, M.D.** Pulte Medical College, Cincinnati, 1876; formerly of Henderson, Ky., died in the Riverside Hospital, Paducah, Ky., October 4, from heart disease, aged 52.

Edward Bliss **Foote, M.D.** Penn Medical University, Philadelphia, 1860, died at his home in Larchmont, N. Y., October 5, after a long period of invalidism, from senile debility, aged 77.

Lyman **Atkins, M.D.** Philadelphia University of Medicine and Surgery, 1866; formerly of Kouts, Ind., died at his home in Valparaiso, Ind., September 20, from senile debility, aged 87.

Oscar B. **Johnson, M.D.** Medical College of Indiana, Indianapolis, 1879; an old practitioner of Hendricks County, Ind., died at his home in Lizton, Ind., August 4, aged 58.

Michael Joseph **Madigan, M.D.** New York University, New York City, 1874, died at his home in Staten Island, N. Y., September 7, after an illness of one year, aged 56.

George A. **Williams, M.D.** St. Louis Medical College, 1865, one of the oldest practitioners of southern Illinois, died at his home in Hardin, September 30, aged 65.

Thomas Y. **Lewis, M.D.** Kentucky School of Medicine, Louisville, 1858, died at his home in Dublin, Texas, September 30, after an illness of several weeks, aged 70.

W. J. **Robinson, M.D.** Eclectic Medical Institute, Cincinnati, 1867; of Eaton, Tenn., died at the home of his son, near Trenton, Tenn., August 31, aged 70.

L. E. **White, M.D.** American Eclectic Medical College, Cincinnati, 1896, died at his home in Muncie, Ind., September 20, from accidental cocain poisoning.

John A. **Beecher** (Examination Massachusetts), died at the home of his sister in Rochester, N. H., September 30, aged 57.

Robert **Schmelter, M.D.** University of Würzburg, Germany, 1879, died at his home in Brooklyn, ctober 11, aged 55.

J. G. **Greene, M.D.** Atlanta (Ga.) Medical College, 1884, died at his home in Cartersville, Ga., October 2.

Queries and Minor Notes

ANONYMOUS COMMUNICATIONS will not be noticed. Queries for this column must be accompanied by the writers's name and address, but the request of the writer not to publish name or address will be faithfully observed.

ANOTHER AUTOMOBILE NUMBER?

WEBSTER, N. Y., Oct. 8, 1906.

To the Editor:—I wish you would publish another "Automobile Number" of THE JOURNAL. It seems to me that it would be appreciated by a very large majority of the members and subscribers. If it could come some time during December or January, it could give us the experience of another season, and be in time to give its pointers to aid in selecting our machines for next season.

WM. STANTON, M.D.

[The "Automobile Number" was highly appreciated by many of our readers, judging from the commendatory letters received, but whether or not it is worth while to devote a number to the subject this winter we are not able to decide. We shall be glad to receive postal card advice from those interested.—EDITOR.]

LIABILITY OF CORPORATIONS FOR MEDICAL SERVICES TO EMPLOYES.

NEW CASTLE, PA., Oct. 8, 1906.

To the Editor:—Several times I have been called on to attend accident or emergency cases of employés by officials or other employés of the company. After attending one case, I presented my bill and was refused payment because I was not the "company physician." Would I be justified in declining to accept further requests for attendance? In referring to a similar instance a local paper called a physician "inhuman" for refusing to attend. B.

ANSWER.—As a general legal proposition, subject to more or less exceptions, corporations do not seem to be liable for medical attendance on injured employés. Nor have minor officials or other employés thereof inherent power to bind corporations to pay for medical services. Whether the higher officials have such power or not often requires a lawsuit to determine. See the following decisions reported in the Medicolegal Department of THE JOURNAL of dates named: Jan. 21, 1905, page 244, Bond vs. Hurd (Mont.); Feb. 25, 1905, page 655, Harris vs. Vienna Ice Cream Co. (N. Y. Sup.); July 15, 1905, page 216, J. H. Mohlman Co. vs. American Grocery Co. (N. J.); Aug. 25, 1906, page 638, Miller vs. Beaver Hill Coal Co. (Ore.); Sept. 15, 1906, page 893, Nelson R. Hall vs. New York, New Haven & Hartford Railroad Co. (R. I.).

The question, "Would I be justified in declining further requests for attendance?" is answered by the Principles of Ethics, which says: "The broadest dictates of humanity should be obeyed by physicians whenever and wherever their services are needed to meet the emergencies of disease or accident." A physician should not refuse emergency calls where life is at stake, no matter what the provocation may be to tempt him to do otherwise.

The Public Service

Army Changes.

Memorandum of changes of stations and duties of medical officers, U. S. Army, week ending Oct. 13, 1906:

Heysinger, J. D., asst.-surgeon, ordered from San Francisco, Cal., to Washington, D. C., to report to the Surgeon General for duty.

Stedman, C. J., asst.-surgeon, ordered to return from Newport News, Va., to his proper station, Fort Stevens, Wash.

Bispham, W. N., asst.-surgeon, relieved from present temporary duties and will return to his proper station, Fort Logan, Colo.

Lewis, W. F., asst.-surg., ordered from Newport News, Va., to Fort Monroe, Va., for temporary duty.

Wakeman, W. J., surgeon, granted an extension of four months to his sick leave of absence.

Kirby-Smith, R. M., asst.-surg., granted an extension of two months to his leave of absence.

Ford, Clyde S., asst.-surg., operation of his order for Philippine service is suspended until further orders.

Palmer, Fred W., asst.-surg., granted 15 days' leave of absence.

O'Connor, R. P., asst.-surgeon, arrived at Fort Leavenworth, Kan., for duty.

Finkston, O. W., asst.-surgeon, relieved from temporary duty in the Department of California, and ordered to duty in the transport service.

Carter, E. C., surgeon, returned to Fort Leavenworth, Kan., from leave of absence.

Boyer, P. L., asst.-surgeon, returned to his proper station, Fort Sam Houston, Texas, from leave of absence.

Ferguson, J. B., contract surgeon, returned to duty on the transport *Dix* from leave of absence.

Daywalt, G. W., contract surgeon, returned to duty at Fort De Soto, Fla., from sick leave.

Ames, R. P., contract surgeon, left Fort St. Philip, La., and arrived at Jackson Barracks, La., for temporary duty.

Van Kirk, H. H., contract surgeon, returned to Fort Sill, Okla., from leave of absence.

Richardson, W. H., contract surgeon, ordered to Fort Monroe, Va., for temporary duty.

Bell, R. P., contract surgeon, ordered to Fort Monroe, Va., for duty.

Baker, C. L., contract surgeon, relieved from further duty at Honolulu, H. T., and ordered to Fort Totten, N. Y., for duty .

Bailey, E., contract surgeon, relieved from further duty in the Philippines Division, and ordered to Fort H. G. Wright, N. Y., for duty.

Repp, J. J., contract surgeon, ordered to the Army General Hospital, Washington Barracks, D. C., for duty.

Sanford, J. L., contract surgeon, relieved from further duty in the Philippines Division, and ordered to Fort Washington, Md., for duty.

Brown, I. C., contract surgeon, reported for duty at Fort McIntosh, Texas, from sick leave of absence.

Hughes, Michael E., contract surgeon, granted leave of absence for four months, in the United States.

Navy Changes.

Changes in the Medical Corps, U. S. Navy, for the week ending Oct. 13, 1906:

Bogan, F. M., P. A. surgeon, to the Naval Hospital, Washington, D. C., for treatment.

Boyd, J. C., Medical Director, to duty in command of the U. S. Naval Medical School Hospital, Washington, D. C.

De Bruler, J. P., asst.-surgeon, to duty at the U. S. Naval Medical School Hospital, Washington, D. C.

Braisted, W. C., surgeon, detached duty at the U. S. Naval Medical School, Washington, D. C., etc., to duty as assistant to the Bureau of Medicine and Surgery, Navy Department, Washington, D. C.

Russell, A. C. H., surgeon, to the U. S. Naval Medical School, and additional duty as member of the Naval Medical Examining Board, Naval Medical School, Washington, D. C.

Castro, D. H., acting asst.-surgeon, appointed an acting assistant surgeon in the United States Navy from October 6, 1906.

Donelson, M., acting asst.-surgeon, appointed an acting assistant surgeon in the United States Navy from October 6, 1906.

Pickrell, G., surgeon, to the Bureau of Medicine and Surgery, Navy Department, Washington, for special duty.

De Bruler, J. P., P. A. surgeon, commissioned a P. A. surgeon in the United States Navy from January 3, 1906.

Dean, F. W. S., P. A. surgeon, commissioned a P. A. surgeon in the United States Navy from January 26, 1906.

Manchester, J. D., P. A. surgeon, commissioned a P. A. surgeon in the United States Navy from June 10, 1906.

Verner, W. W., P. A. surgeon, commissioned, a P. A. surgeon in the United States Navy from May 25, 1906.

Rennie, W. H., P. A. surgeon, commissioned a P. A. surgeon in the United States Navy from May 25, 1906.

Woodward, J. S., P. A. surgeon, commissioned a P. A. surgeon in the United States Navy from June 10, 1906.

Abeken, F. G., P. A. surgeon, commissioned a P. A. surgeon in the United States Navy from July 10, 1906.

Public Health.

List of changes of station and duties of commissioned and non-commissioned officers of the public health and marine hospital service for the seven days ended Oct. 10, 1906.

Gardner, C. H., P. A. surgeon, relieved from duty at Galveston, Texas, and directed to proceed to San Francisco, reporting to the Medical Officer in Command for duty and assignment to quarters.

Corput, C. M., P. A. surgeon, relieved from duty at New Orleans, and directed to proceed to Galveston, Tex., and assume command of the service at that port.

Ebert, H. G., asst.-surgeon, relieved from duty on the Revenue Cutter *Perry*, and directed to assume command of the service at Seattle, Wash.

Ebert, H. G., asst.-surgeon, granted leave of absence for fifteen days.

Salmon, T. W., asst.-surgeon, granted leave of absence for fourteen days from Oct. 21, 1906.

Simpson, Friench, asst.-surgeon, directed to proceed to Baltimore, reporting to Medical Officer in Command for duty and assignment to quarters.

Herring, R. A., asst.-surgeon, directed to report to the Medical Officer in Command, New Orleans, for duty and assignment to quarters.

Bailey, C. W., acting asst.-surgeon, granted leave of absence for ten days, from Aug. 16, 1906, on account of sickness.

Cleaves, F. H. acting asst.-surgeon, granted leave of absence for four days, from Oct. 2, 1906, under Paragraph 210 of the Regulations.

Houghton, M. W., acting asst.-surgeon, granted leave of absence for fifteen days, from Oct. 15, 1906.

Hunter, W. R., acting asst.-surgeon, granted leave of absence for fourteen days, from Oct. 10, 1906.

Stanton, J. G., acting asst.-surgeon, granted leave of absence for thirty days, from Oct. 9, 1906.

BOARD CONVENED.

A board of medical officers was convened to meet at Galveston, Tex., Oct. 10, 1906, for the purpose of examining candidates for cadetships in the Revenue Cutter Service. Detail for the board: Passed asst.-surgeon C. H. Gardner, chairman; acting asst.-surgeon William Gammon, recorder.

Health Reports.

The following cases of smallpox, yellow fever, cholera and plague have been reported to the Surgeon-General Public Health and Marine-Hospital Service during the week ended Oct. 12, 1906:

SMALLPOX—UNITED STATES.

Colorado: General, Aug. 1-31, 30 cases.
Kansas: General, Aug. 1-31, 29 cases.
Louisiana: New Orleans, Sept. 22-29, 3 cases.
New York: New York, Sept. 22-29, 1 case.
North Carolina: General, Aug. 1-31, 12 cases.
Ohio: Cincinnati, Sept. 29-Oct. 5, 1 case.

SMALLPOX—FOREIGN.

Africa: Capetown, Aug. 18-25, 3 cases.
Canada: Winnipeg, Sept. 22-29, 2 cases.
Chile: Iquique, Aug. 18-Sept. 1, present.
India: Calcutta, Aug. 11-18, 2 deaths.
Italy: General, Sept. 13-20, 3 cases.
Russia: Odessa, Sept. 8-15, 1 case.

YELLOW FEVER.

Costa Rica: Limon, Sept. 25, 1 case.
Cuba: Habana, Oct. 5-10, 1 case, 1 death; Santa Clara Province, Oct. 5-11, 2 cases, 1 death.
Mexico: Merida, Sept. 23-29, 4 cases, 4 deaths.; Tuxtepec, 1 case; Vera Cruz, 1 death.

CHOLERA.

China: Shanghai, Sept. 24-Oct. 7, 87 deaths.
India: Calcutta, Aug. 11-25, 29 deaths.

PLAGUE.

Egypt: Alexandria, Sept. 14-19, 3 cases, 1 death; Suez, 7 cases, 4 deaths.
India: General, Aug. 11-18, 1,937 cases, 2,113 deaths; Calcutta, Aug. 11-25, 1 case, 25 deaths.
Japan: Osaka, Oct. 10, present.
Persia: Seistan Province, June 23-July 27, 23 cases, 37 deaths.

Society Proceedings

COMING MEETINGS.

Mississippi Valley Medical Association, Hot Springs, Ark., Nov. 7-8.
American Public Health Assn., Mexico City, Dec. 3-7.
Southern Surg. and Gyn. Assn., Baltimore, Dec. 11-13.

COLORADO STATE MEDICAL SOCIETY.

Thirty-sixth Annual Meeting, held at Denver, Oct. 9-11, 1906.

The President, DR. H. G. WETHERILL, in the Chair.

Work of the House of Delegates.

Advertising by means of local puffs and personal write-ups in the daily, weekly and other papers was condemned by the House of Delegates, and constituent societies urged to use every legitimate means to stamp it out.

The House of Delegates commended the action of the Board of Trustees and the Editor of THE JOURNAL of the American Medical Association and its Council on Pharmacy and Chemistry in investigating and placing before the profession the facts regarding pharmaceutical preparations of the class extensively advertised to physicians.

The house passed a resolution to the effect that the practice of giving or taking a commission for referring patients is unprofessional, dishonorable and dishonest.

The Committee on Medical Education made a report in which it favored the minimum standard of medical education as adopted and recommended by the American Medical Association, July, 1905, and the House of Delegates adopted it as the minimum requirements of the society. These requirements are:

1. Preliminary requirements to be a high school education or its equivalent, such as would admit a student to one of our recognized universities.
2. Preliminary requirements to be passed on by a state official, such as the superintendent of public instruction, and not by an official of a medical college.
3. A medical training in a medical college, having four years of not less than thirty weeks each year of thirty hours per week of actual work.
4. Graduation from an approved medical college, requiring the candidate to pass an examination before a state medical examining board.
5. The passing of a satisfactory examination before a state medical examining board.

The house further recommended that the legislative committee of the society be instructed to recommend to the Colorado State Board of Medical Examiners the adoption of these minimum requirements, to go into effect Jan. 1, 1908.

The house expressed itself as being in hearty accord with the movement to demand from insurance companies a fee of not less than $5.00 for every complete examination made, irrespective of the amounts of the policies. It was further urgent on constituent medical societies, that have not already done so, to take proper steps to enforce these demands.

The house endorsed and ratified the action of the National Congress in passing a pure-food law, and urged the passage of a law in Colorado at the next legislature along identical lines.

Officers.

The following officers were elected for the ensuing year: President, Dr. H. R. Bull, Grand Junction; vice-presidents, Drs. Herbert B. Whitney, Denver; E. R. Neeper, Colorado Springs; Mary E. Phelps, Canon City, and O. P. Johnston, Boulder; secretary, Melville Black, Denver; treasurer, S. E. Solly, Colorado Springs; delegate to American Medical Association for two years, J. M. Hall, Denver; alternate, T. Mitchell Burns, Denver.

The next meeting will be held in either Denver or Glenwood Springs Sept. 17, 1907.

Ocular Headaches.

DR. EDMUND W. STEVENS, Denver, said the relation of eyestrain to headaches and other neuroses was first pointed out by Mitchell and Thomson thirty years ago. The medical profession has been slow to appreciate the importance of the subject. Eyestrain is the most common cause of headache in the otherwise healthy. Ocular headaches come on at any age, but are very frequent from 6 to 12 years of age, and again with beginning presbyopia. They are indistinguishable in character and position from headaches due to any other agency. He discussed the relation of eyestrain to migraine. The adjustment of proper glasses does more for the relief of migraine than any other treatment. He emphasized the importance of carefully measuring errors of refraction under a mydriatic.

Importance of Early Recognition and Treatment of Squint.

DR. JOHN M. FOSTER, Denver, said that parents and physicians often fail to detect squint on account of its periodicity, and they frequently are misled between squint and paralytic muscular troubles. The etiologic factor in the majority of cases of cross-eye is an error of refraction. The difficulties in determining these errors have been greatly simplified by the use of object test cards, cycloplegia and retinoscopy. The importance of early detection of refractive errors was pointed out, also the application of devices for exercising the weakened muscles, thereby increasing their strength sufficiently to enable them to maintain the correct position of the eye after it has once been obtained. The conservative methods are especially insisted on, as very few young children should be operated on for squinting eyes. The percentage of cases cured where properly fitted and fitting glasses are used is large if combined with proper exercises for the weakened muscles.

In advanced unilateral convergent squint there is always a loss of vision in the deviating eye, frequently of a high degree. It is in these cases, especially in young children, that our ingenuity is taxed to not only preserve what vision there is in the poor eye, but to increase it by correction of refractive errors and the use of cycloplegics.

Acute Suppurative Otitis Media and Mastoiditis.

DR. WILLIAM C. BANE, Denver, reported the case of a patient, aged 19 years, who was examined fifty-five hours after inflammation began. The membrana tympani was incised, followed by a free discharge of bloody serum. The discharge contained streptococci. The pain in the ear and mastoid, with elevation of temperature, persisted. On the eighth day of inflammation he operated on the mastoid. The cells were grayish and contained pus. On the morning of the fifth day after operation the pulse was 65 and the temperature 99 F., yet the wound had a pale appearance. Evening temperature was 101.4. On the sixth day at noon the patient had a severe chill; pulse, 120; temperature, 104. There was tenderness over the lateral sinus and internal jugular vein. At 8 p. m. the sinus was uncovered and incised, exposing a clot. The internal jugular was excised and a thrombus removed from the sinus by Dr. Lyman. Patient left the hospital the twenty-fourth day after the mastoid operation.

(*To be continued.*)

BRITISH MEDICAL ASSOCIATION.

Seventy-fourth Annual Meeting, held in Toronto, Ontario, Aug. 21-25, 1906.

(*Continued from page 1222.*)

SECTION OF OBSTETRICS AND GYNECOLOGY.

Relation of the Gynecologist to the General Practitioner.

A. F. FREELAND BARBOUR, M.D., Edinburgh, the president, in his introductory remarks, discussed the erroneous idea which commonly prevails regarding gynecology. The student believes that gynecology, inasmuch as it refers to diseases peculiar to women, has a special pathology separate from that of general pathology. He fails to recognize that aside from the anatomic peculiarities and the physiologic changes involved, there is no difference between salpingitis and appendicitis, and that epithelioma of the cervix does not differ pathologically from epithelioma of the lip. The great majority of gynecologic cases must first be in the hands of the general practitioner, who makes the first diagnosis of the conditions of the patient and outlines the routine treatment. Specialism in gynecology, apart from major gynecologic operations, is more akin to specialism in diseases of the heart and lungs than to specialism in the sense of mental diseases or diseases of the eye. The way of the specialist in gynecology passes through the domain of the general practitioner, and the specialist is called in when the general practitioner recognizes that he has not the training nor experience to enable him successfully to diagnose his case or treat his patient. While gynecology should be taught as a specialty, it should be taught in relation to medicine, surgery and obstetrics. A great fault in the medical education of to-day is that each subject is taught by itself, instead of in its relation to other portions of the medical curriculum.

SECTION OF THERAPEUTICS.

An Imperial Pharmacopeia.

DONALD MCALISTER, M.D., Cambridge, England, the president, in his introductory remarks, spoke in behalf of the British Pharmacopeia, noted the lack of harmony in the various national pharmacopeias, and suggested that the British Pharmacopeia should be adapted to the needs of all the nations included in the British dominions. He is investigating the possibilities of the proposal.

Medical Reciprocity.

The president also considered the question of medical reciprocity, in which he pointed out that by the medical act of 1886, an individual holding a recognized colonial medical diploma, granted to him in a British possession, and who is of good character, is legally entitled to practice medicine in that possession, and is also entitled, without examination, to practice in the United Kingdom, and to be registered in the official Medical Register. Before a colonial diploma can be thus recognized, however, the provincial council must be satisfied that the British possession in question affords to the home-registered practitioner such privileges of practicing therein as may seem just. Orders in council have been issued applying the act to New Zealand, the states of Australia, India, Ceylon and Malta, all of which grant medical diplomas. As these diplomas are recognized by the Medical Council their holders are at once capable of registration and of acquiring all the rights and privileges conferred thereby. A similar enactment exists in relation to foreign countries, and Italy

and Japan thus far have been afforded corresponding privileges. With the exception of Nova Scotia, no province of Canada has as yet applied for admission. Under the existing conditions a graduate of Ontario or Quebec cannot legally hold a medical appointment in the royal army or navy; he can not be appointed surgeon to a British ship or to any hospital or other publicly established body or institution in the United Kingdom; he is ineligible as a medical officer of health, he can not be a condidate for a diploma in hygiene or state medicine, and he may not use his degree as a qualification for private practice in any British possession governed by the medical act. The president urged the mutual recognition of professional qualification, that these disabilities might be removed, feeling sure that educational interchange would excite a powerful influence for good not only in the Canadian provinces, but in Great Britain itself.

The Alcohol Question.

DR. A. D. BLACKADER, Montreal, discussed the use of alcohol in treatment. He spoke of the antiquity of alcohol as a remedial agent and said that in the last twenty years considerable opposition had been manifested. The author feels that the stimulation of the heart from alcohol has been overestimated, and that it is somewhat feeble and transitory, but that its action on the nervous system is more complex, and that it is more depressing on the centers of judgment, discernment and self-control. In resisting the powers of bacteria, the use of large doses of alcohol has not been justified by experiments. As a food, alcohol can be utilized when other foods can be given only with difficulty, and it aids in the digestion of other foods. In fever and other conditions of exhaustion, alcohol does not tax the digestive apparatus, and increases the secretions that aid digestion. Used judiciously, alcohol, in his opinion, leaves fewer after-effects than other narcotics.

SAMUEL J. MELTZER, M.D., New York City, advocated the medicinal use of alcohol. He considered its use invaluable in the treatment of typhoid. He advised moderate doses and believed that alcohol properly used does good. The consensus of opinion among medical men is that it does no harm, and that in proper doses actual benefit results from its use. It increases blood pressure and corrects the distribution of the blood. While in health, alcohol may be a posion, it is a beneficent drug in diseases.

SECTION OF PHYSIOLOGY.

At the joint meeting of the sections of Physiology and Medicine a discussion was held on "Over-Nutrition and Under-Nutrition, with Special Reference to Proteid Metabolism."

PROF. R. H. CHITTENDEN, of Yale University, New Haven, related the results noted by him in a series of experiments relating to proteid metabolism. His special theme was the diet necessary to maintain health with the smallest amount of work by the organism. He questioned whether or not the human diet might be more in harmony with the minimum of proteid required. He believes in a variation of diet and that a vegetable proteid, like the gluten of wheat, is far more nutritious than ordinary meat. His final advice was that we should go to work to acquire knowledge of the physiology of nutrition, about which we now know so little. In his experiments, which he detailed, five professional men had lived from six to nine months on from 34 to 56 grams of proteid matter daily, or not more than one-half the standard quantity used. There is no evidence, the author stated, that if continued, this would be satisfactory, but he, himself, had carried it on for four years and a half, with great gain to bodily strength, with no deterioration of blood, with increase of power and decrease of fatigue. He asserted that more people suffer from the effects of over-eating than from those of alcohol. From experiments on animals, he found that disease resistance is much increased by a low proteid diet, that oxidation is lower, and that the organism works more economically.

PROF. WILLIAM D. HALLIBURTON, London, agreed with the results of Professor Chittenden, but stated that experiments on animals are not conclusive. The coefficient of proteid matter for animals and also for human beings varies. He considers high feeding responsible for many of the so-called "open air" cures for phthisis. Less reserve force is a vague term, but if we are living on the margin of our needs, when privation comes there must be a breakdown. An infant takes probably ten times the amount of nourishment it needs. While this is a physiologic error, it is so arranged by Nature. The excretory organs are sufficiently large, active and ready for the daily turnover. In the larger amount of food used by the body, there may be a small amount of the substances used for tissue repair, and this may be the cause of the intake, which seems at first larger than necessary.

OTTO FOLIN, Ph.D., Waverly, Mass., considered the use of cooked muscle as an aid to muscular energy, as more or less of a superstition. Many practices prevail among civilized nations which no scientific men recommend. Alcohol, for instance, is freely taken, but no physician will recommend the corresponding amounts as desirable. The universal desire to avoid useful work is at least as widespread as the desire for excessive proteid consumption, but this is looked on as a cause of moral degeneracy.

DR. ROBERT HUTCHINSON, London, believed that the proteid question was not to be solved except by the coöperation of physiologists and medical men, and that we want not the proteid minimum, but the proteid optimum. He accepted Professor Chittenden's minimum and recognized the great service to medicine by the American school, but could not accept the deductions that the least was necessarily the best. It is possible to get along with but one lung or one kidney, but two have been provided and are preferable.

(To be concluded.)

MEDICAL SOCIETY OF THE STATE OF PENNSYLVANIA.

Fifty-sixth Annual Meeting, held in Bedford Springs, Sept. 10-13, 1906.

(Concluded from page 1221.)

Oration on State Medicine.

DR. SAMUEL G. DIXON, Health Commissioner of Pennsylvania, made a plea for vaccination and referred to the fact that a year ago the Department of Health had been instrumental in enforcing the law of 1895, providing that unvaccinated children could not be admitted to school. Since then hundreds of thousands of children have been made immune against smallpox by vaccination. He also outlined the work of the department in the fight against typhoid fever and in the distribution of diphtheria antitoxin. The midwifery evil, he said, is receiving the attention of the department as well also as the securing of pure water to the people of the state.

Bearing on the Oration on State Medicine the following resolution was passed:

WHEREAS, There is a reported large mortality following child birth, which is due to preventable infection and other accidents of labor; and

WHEREAS, The state has increased the public safeguards requiring an examination of physicians before allowing them to practice midwifery; be it

Resolved, That a committee of nine be appointed by the president of the State Medical Society to formulate an act, to be introduced before the legislature of the State of Pennsylvania, establishing a legal standard of education for midwives, which may be, as far as possible, in harmony with the best standards in force in other states.

Stenosis of Pylorus.

DR. GEORGE S. DICKINSON, Erie, cited illustrative cases. In one case the condition was attributed to the constant pressure of the stomach against the desk, in a man, aged 50, who had been a book-keeper for a great many years.

DR. JOHN A. LICHTY, Pittsburg, said that pyloric stenosis must be differentiated from simple atonic dilatation of the stomach, the vomiting of pregnancy, simple hyperchlorhydria, right movable kidney, gastroptosis, gastric neurasthenia. Treatment in complete cases is necessarily surgical, and pyloroplasty or pylorectomy the desirable procedure, although the mortality is still high. For this reason posterior gastroenterostomy is the operation most frequently employed. Medical and dietetic treatment are advised in partial stenosis.

Gastroptosis; Its Treatment.

DR. JOHN J. GILBRIDE, Philadelphia, said that in diagnosis determination of the lower boundary of the stomach is not sufficient, the lesser curvature in a lower position than normal

being essential. Treatment should be preventive so far as possible. The bandaging of the abdomen during the lying-in period was advised. Mechanical and medical treatment should be persistently tried before surgery is resorted to. The preferable surgical procedure is the one employed by Beyea.

Peculiar Atrophic Affection of the Skin in a Neurotic Subject.

DR. RUDOLPH MYERS, Huntingdon, reported the case of a lady of neurotic tendency, who, after a slight scratch on the ring finger, observed that the skin on the back of the finger had become dark and sunken in a space three-fourths of an inch long and half an inch wide. Fourteen gangrenous points in all formed. A second attack ensued, beginning near the elbow, and attacks recurred every seven days until she had six. The case was regarded as one of neurotic gangrene.

Salt-Free Treatment of Epilepsy.

DR. ALFRED GORDON, Philadelphia, said that it has been shown that NaCl plays a great rôle in the normal metabolism of the body by influencing the elimination of waste products. Applied to epilepsy its presence in the diet increases the severity and the frequency of seizures. Its withdrawal shows a beneficial effect.

Diagnostic Significance of Herpes Simplex in Infectious Diseases.

DR. JAY F. SCHAMBERG, Philadelphia, concludes that herpes zoster, both the facial and genital varieties, while not clinically identical, are closely related; that it is highly probable that the vast majority of all cases of herpes of the various types are the result of the action of a toxin. The frequency of herpes simplex in certain infectious diseases and its rarity in others is regarded as evidence that the toxin possesses certain qualities in order to exert a selective affinity for sensory nerve structures. The toxin producing herpes simplex and herpes zoster is in all probability not the result of the action of any specific micro-organism. Pneumonia, spotted fever, and malaria are diseases in which herpetogenic toxin develops with a fair degree of constancy. Its frequency in these diseases and its rarity in typhoid fever and other infectious maladies make its appearance a symptom of considerable diagnostic import. The history of the tendency of certain individuals to recurrent attacks of facial herpes from slight indispositions should, however, be elicited before according to herpetic outbreaks the diagnostic value mentioned.

Relation of Cardiac Muscle and Valves to Arterial Tension.

DR. W. M. STANTON, Philadelphia, said that the factors concerned in arterial tension are the heart, the arteries, the vessels under the control of the vasomotor system, and the quality of the blood. With poor nutrition the reserve power of the heart is soon used up, and hypertrophy failing, signs of lost compensation appear at an earlier period. In blood-pressure estimates made under his direction in cases of tuberculosis the most marked urinary evidences in the way of albumin and casts were not accompanied by increased pressure. In 21 cases the highest systolic pressure was 145, and only in eight cases was the systolic pressure 100 or over. The poor nutrition was suggested as explanation of this fact.

Other papers read were, "Retinal Asthenopia," by Dr. Jos. E. Willetts, Pittsburg; "Pathology of Goiter," by Dr. George P. Mueller, Philadelphia; "Surgery of Thyroid Gland," by Dr. R. G. Le Conte, Philadelphia; "Brain Complications Following Mastoiditis," by Dr. F. W. Frankhauser, Reading; "Photographic Illustrations in Modern Medical and Surgical Literature," by Dr. C. B. Longenecker, Philadelphia; "Laryngectomy for Malignant Disease" and "Demonstration of Bronchoscopy and Esophagoscopy," by Dr. C. Q. Jackson, Pittsburg; "Some New Features of the U. S. P.," by Dr. A. Koenig, Pittsburg; "Electricity in Treatment of Disease," by Dr. J. V. Shoemaker, Philadelphia; "High Frequency Current in Advanced Pulmonary Tuberculosis," by Dr. M. L. Barshinger, York; "High Frequency Current in Rheumatoid Arthritis," by Dr. G. E. Pfahler, Philadelphia; "Diagnosis of Brain Abscess," by Dr. J. W. Boyce, Pittsburg; "Pernicious Anemia with Jaundice," by Dr. John G. Wilson, Montrose; "The Trained Nurse in the Public Schools," by Dr. S. W. Newmayer, Philadelphia; "Smallpox," by Dr. J. W. Ellenberger, Philadelphia; "Quarantine," by Dr. A. B. Brumbaugh, Huntingdon; "Fixation of Movable Kidney," by Dr. G. E. Shoemaker, Philadelphia; "Surgical Exploration in Abdominal Complications of Typhoid," by Dr. J. B. Roberts, Philadelphia; "Fractures of Head of Radius," by Dr. T. T. Thomas, Philadelphia; "Cleft Palate," by Dr. H. R. Wharton, Philadelphia; "Surgery of the Thoracic Cavity," by Dr. J. C. O'Day, Oil City; "Surgical Tuberculosis," by Dr. Geo. W. Guthrie, Wilkesbarre; "Hydrophobia and Its Treatment," by Dr. H. D. Jump, Philadelphia; "Aids in Teaching Climatology and Climatotherapy," by Dr. G. Hinsdale, Hot Springs, Va.; "Hypertrophic Pulmonary Osteoarthropathy," by Dr. H. M. Landis, Philadelphia; "Symptomatology and Diagnosis of Lobar Pneumonia," by Dr. James J. Johnston, Pittsburg; "Certain Complications of Lobar Pneumonia, Considered with Reference to Surgical Interference," by Dr. P. Y. Eisenberg, Norristown; "Treatment of Lobar Pneumonia," by Dr. James M. Anders, Philadelphia; "Clinical Results from Examination of Feces After Intestinal Test Meal," by Dr. Clement R. Jones, Pittsburg; "Relation of the Lymph Glands in the Mediastinum to Disease, and their Value in Early Diagnosis," by Dr. William S. Newcomet, Philadelphia.

AMERICAN ASSOCIATION OF OBSTETRICIANS AND GYNECOLOGISTS.

Nineteenth Annual Meeting, held at Cincinnati, Sept. 20-22, 1906.

(*Concluded from page 1220.*)

The Rectum in Its Relation to Diseases of Women.

DR. H. O. PANTZER, Indianapolis, said that a faulty function of either of the relevant organs might arrest or modify the function of its neighbor. Chronic constipation, at times, affected the quantity, frequency, or course of the menstrual flow. Rectal touch, he said, is practiced very little. The beginner should employ the rectal touch to get his first true impressions of the pelvic organs in the body, and the expert can not afford to dispense with it. The variable conditions of the rectum, as found by both vaginal and rectal examination, are of great diagnostic and therapeutic interest. The rectum in the multipara always shows deviations from the normal, connected with the events of parturition and puerperality. In sequence these deviations became accentuated. There are remarkable differences recognized which have different bearings and should have varied treatment, medicinal and operative. The rectal temperature in pelvic diseases has special significance. The oral temperature in these cases is often misleading. The rectal temperature may be anywhere from one-half to three degrees more than the oral temperature. The recognition of a febrile disease or its gravity might depend on this procedure, making it obligatory to take the record of both sites.

Trend of the Times in Appendicectomy.

DR. N. STONE SCOTT, Cleveland, Ohio, said that the next step in progressive surgery is the perfecting of the technic, with an eye single to the best interests of the patient, even to the smallest detail. Mere recovery was no longer all-sufficient. The ideal condition is health. Undesirable elements can be eliminated more surely and fully if in addition to the essentials heretofore considered necessary, due attention is given to certain points which have been too long neglected. The first of these is the choice of anesthetics. The ideal anesthetic had yet to be discovered. The method of operating is of utmost importance. The incision should be large enough to give access to the field of operation. The extent of the skin incision is of no importance, except for cosmetic effect. If the patient is fleshy, this superficial cut might of necessity be a long one. In aseptic cases the fascial separation should be only sufficient to admit the tip of the index finger. This is crowded through the soft parts, which are dilated easily to admit the entire length of the finger. Given an anesthetic with little, if any, attendant nausea, an incision so short as to close of itself, there is no physiologic reason for the recumbent posture. The author has gradually short-

ened not only the incision, but also the time spent by the patient in bed, for not infrequently, whether from physical overwork or nervous strain, patients need and should have a course of the rest cure. But the ideal operation can be performed only on an ideal patient; one who is intelligent, obedient, hopeful, and of good recuperative ability, both mental and physical, having well-developed muscle and fascia, without excess of fat, and a movable appendix with a good mesentery; one whose condition is uncomplicated by intercurrent disease or by severe sequelæ, the result of previous attacks.

Points Commonly Contested in Diagnosis and Treatment of Appendicitis.

DR. JOSEPH PRICE, Philadelphia, found in the reports of some good hospitals that patients suffering from this disease remained in the medical wards until dead, no surgical effort being made to save them. This simply meant that the clinician did not yield the point that appendicitis is a surgical affection; that he did not have a precise knowledge of pathology; that he had not served his apprenticeship as a resident or as an aid to a surgeon. When the operations for appendicitis are complete the recoveries and cures pleasing, reopenings or secondary operations for complications are not necessary. One prominent operator reported 24 cases of ileus in his work. This meant that his work was defective. Multiple incisions and drains in both the pelvic and abdominal cavities are insults both to surgery and to the peritoneum. Most operators have succeeded in saving their desperate cases by a small or a generous incision. The multiple incision and drain only favors an additional point for complications. Waiting and watching should not be taught or practiced, either in private or public, under skilled or unskilled observation. Perforations occur under the eyes of surgeons, and good clinicians watch and endeavor to limit spreading peritonitis and infection with quick disastrous results. Most good surgeons admit that they are distressed and unhappy while watching and waiting for an appendicitis that has not been operated on. A perforation, a spreading infection, does thrice more harm, and kills thrice as many patients as an inexperienced operator in an early operation.

Diagnosis and Surgical Treatment of Injuries to the Diaphragm.

DR. JOHN YOUNG BROWN, St. Louis, Mo., from a careful analysis of the cases coming under his observation, is convinced that there are present in but few of them symptoms on which a positive diagnosis of injury to the diaphragm can be made, and that in many cases when extensive injuries to the abdominal viscera are present, the patients are apparently in excellent condition, and present practically no symptoms. He believes, therefore, that in all penetrating gunshot or stab wounds of the chest, where from the location of the wound it is reasonable to conclude that injury to the diaphragm is possible, the existence or non-existence of such injury should be determined by proper exploration. Positive symptoms in these cases are generally the signals of peritonitis, and peritonitis of this character is usually fatal.

If this view is correct, how should we explore through the chest or through the abdomen? A penetrating wound of the diaphragm is a penetrating wound of the abdomen, and an exploration to determine the presence of such an injury which does not enable the operator to repair, if present, the associate injuries to the abdominal viscera, should not be undertaken. To sew up an injured diaphragm and leave a perforated bowel or stomach will certainly prove disastrous. Through an abdominal incision, the extent of injury to both diaphragm and abdominal viscera can be determined absolutely. If it is found that the wound in the diaphragm is so situated that it can not be repaired through an abdominal incision, thoracotomy can be done at the site of the chest wound, resecting an inch or two inches of rib. With the hand in the abdomen, the diaphragm can be pushed into the thoracotomy wound, making the work of repair quite easy. A method which he has found very useful in dealing with injuries of this character consists of leaving both ends of the first suture long, using one as a tractor. This method enables the operator to work through a very small incision, and frequently does away with the necessity of resecting more than a portion of one rib.

The mortality of this work always will be high. Many of these cases are mortally wounded when seen by the surgeon. There are, however, quite a few whose injuries could be repaired with satisfactory results, if operation is undertaken early. He urged that more attention be paid to penetrating wounds of the lower chest, and that early exploration be undertaken as a routine procedure in all cases where injury to the diaphragm is suspected.

Reflex Dyspepsias in Abdominal and Pelvic Disease, and Their Surgical Treatment.

DR. HERMAN E. HAYD, Buffalo, N. Y., said (1), the intimate nervous supply of the abdominal and pelvic organs often make one organ reflect and masquerade symptoms which represent the disease of the other. Chronic appendicitis, retroversions and floating kidney very frequently produce very marked dyspeptic symptoms. Gall-bladder disease and often stones without jaundice are treated for simple dyspepsia. (2), He made a plea for the more careful examination of operative cases. Frequently many organs are involved in the symptomatology, and the patient remains uncured because of incomplete surgery. (3), Serious stomach diseases producing various dyspeptic symptoms, such as ulcer, hour-glass contraction, pyloric obstruction, chronic gastritis with dilatation and early cancer, should be placed among the curable surgical diseases, and should receive the unquestioned benefits of early surgical interference.

TRI-STATE MEDICAL SOCIETY OF ALABAMA, GEORGIA AND TENNESSEE.

(NOW THE SOUTHERN MEDICAL ASSOCIATION.)

Eighteenth Annual Meeting, held in Chattanooga, Tenn., Oct. 2-4, 1906.

The President, DR. A. BENNETT COOKE, Nashville, in the Chair.

Addresses.

Addresses of welcome were delivered by the Hon. W. R. Frierson, Mayor of Chattanooga, Dr. Luther Freeman, on behalf of the professions, and Dr. William L. Nolen on behalf of the medical profession of Chattanooga. These were responded to by Dr. George C. Savage, Nashville.

DR. A. BENNETT COOKE, Nashville, the President, in his annual address, entitled "Medicine and Things," denounced in scathing terms the methods adopted by the "patent medicine" manufacturers and vendors.

DR. JERE L. CROOK, Jackson, Tenn., in his paper, "The Attitude of Some Life Insurance Companies Toward the Profession," described and denounced the transactions of one of the life insurance companies. The paper was warmly endorsed by the members and a resolution was proposed by Dr. James B. Cowan, Tullahoma, Tenn., and adopted, commending the stand taken by Dr. Crook. A copy of the resolution will be sent to the company in question.

Reorganization.

By a unanimous vote of the members the association agreed to relinquish its charter and form the Southern Medical Association, adding the states of Louisiana, Mississippi and Florida. The states of North and South Carolina and Kentucky have also been invited to coöperate. The new constitution and by-laws adopted are said to be in accordance with that suggested by the American Medical Association for district associations.

Election of Officers.

The following officers were elected: President, Dr. Henry H. Martin, Savannah, Ga.; vice-presidents, Drs. Mack Rogers, Birmingham, Ala., James B. Cowan, Tullahoma, Tenn., and John R. Tackert, Meridian, Miss.; secretary, Dr. Raymond Wallace, Chattanooga, Tenn., and treasurer, Young L. B. Abernathy, Chattanooga.

The first meeting of the Southern Medical Association will be held on the second Tuesday in October, 1907, in Birmingham, Ala.

Therapeutics

Hemicrania.

The best results in the treatment of hemicrania, according to H. C. Becker, in *N. Y. Med. Jour.*, are obtained by instituting treatment early in the disease or during the prodromal attack as manifested by a state of mental depression and irritability, associated with general languor. Later a pain over one eye or in the back part of the head is an early sign, later developing into a pain throbbing in character. Under such conditions Becker states that the patient should not indulge in reading or in any exercise necessitating eye strain. He should be instructed to take a saline laxative and a hot mustard footbath, and to lie down in a darkened, quiet room and to sleep, if possible. Cold applications are frequently of benefit in affording relief to the severe, throbbing headache. To give immediate relief the following is recommended:

℞. Acetphenetidini .....gr. v |30
Caffeinæ citratæ.....gr. ss |03
Codeinæ sulph.....gr. 1/6 |25

M. Ft. capsula No. i. Sig.: One such every two hours.

In some instances he recommends the following:

℞. Ext. cannabis indicæ.....gr. ss |03
Camphoræ monobrom.....gr. i |06

M. Ft. cap. No. i. Sig.: One such capsule every two hours.

When the pain is sudden in its onset and throbbing in character, ergot combined with codein is recommended:

℞. Ext. ergotæ.....gr. i |06
Codeinæ .....gr. 1/6 |25

M. Ft. capsula No. i. Sig.: One such capsule every two or three hours for two or three doses.

Dizziness is not infrequently complained of after the pain has been relieved by the ergot, and may be relieved by applying the galvanic current over the site of the pain.

Becker does not omit to mention the fact that the drug treatment of hemicrania is very often disappointing as the effect of the dose wears off, so to speak, and must be increased in size, and while the medicine may afford relief at one time, the same sized dose will prove insufficient a second time.

He also warns against the danger of the patient becoming addicted to the use of the coal-tar products.

PROPHYLAXIS.

Patients subject to attacks of hemicrania should guard against undue nervous excitement; and as hemicrania is common to neurasthenics, the proper treatment of neurasthenia should be instituted. One of the most common things to be corrected is some error in refraction, especially in children who are frequently troubled with astigmatism, nasal disturbances are less frequently a cause.

Gouty conditions and rheumatic diatheses are prominent factors in the etiology of hemicrania, at least in adults, and proper treatment should be established to lessen the frequency and severity of the attacks. Consequently Becker recommends in such cases colchicum in gouty cases and the salicylates in rheumatic conditions.

Anemia, when present, should be treated by administration of iron and the patients should be advised to exercise in the fresh air.

TREATMENT OF ATTACKS.

If the attack occurs after a hearty meal, an emetic dose of the syrup of ipecac should be administered. Following emesis, he recommends calomel in doses of grain 1/6 each (.25) every half-hour for eight doses, followed in two hours by half an ounce (15.) of magnesium sulphate in half a glass of warm water. An enema of soapsuds and warm water can be given, and small quantities of warm water should be given internally at frequent intervals for from six to twelve hours. To relieve the acute pain Davis recommends the following combination:

℞. Acetphenetidini .....gr. v |30
Salolis
Caffeinæ citratæ, āā.....gr. i |06

M. Ft. capsula No. i. Sig.: One such capsule every two hours for an adult.

He also recommends galvanism to the temples and to the back of the neck for 30 minutes daily. The elimination from the kidneys should be carefully watched,and in case these organs are acting sluggishly he recommends the administration of potassium citrate in 20-grain doses (1.30) in a glass of distilled water three times a day. The diet should be carefully watched and regulated.

During the period between the attacks the following combination is advised:

℞. Sodii phosphatis.....gr. xx 1|30
Salolis .....gr. x |65
Tinct. nucis vom.....m. v |30
Aquæ dest. q. s. ad.....f℥iv 120|

M. Sig.: To be taken at one dose in a glass of vichy water, one hour before breakfast, three times a week.

To decrease the severity and lengthen the time between the attacks he recommends the following combination:

℞. Sodii bromidi.....gr. xv 1|
Tinct. cannabis ind.....gtt. x |65
Syrupi simplicis q. s. ad.....f3i 4|

M. Sig.: To be taken at one dose.

In cases of gouty individuals with high arterial tension he recommends potassium iodid grains 10 (.65) three times a day, and in conjunction with it nitroglycerin in moderate size doses.

Davis also recommends that in anemia the patient take two hot baths weekly, in addition to the usual medicinal treatment.

Randolph, in the same periodical, states that the treatment of the attack is very unsatisfactory and that no drug taken by the mouth can be absorbed during the nausea. He states that the best results are obtained by giving calomel in doses of grain ⅛ (.008) each every half-hour, after vomiting has taken place, and continued until one grain (.06) has been taken.

Nausea in some of these cases may be relieved by the local application of a mustard plaster. The only scientific method, according to Randolph, lies in prophylactic measures.

Neuralgia and Headache.

L. Williams, in the *Clinical Journal*, makes a division of the cases which are characterized by pain along the nerve into those in which the condition is a fibrositis, an inflammation of the fibrous tissue of the nerve, and those in which the pain is due to some condition outside of the nerve itself. In the sciatic nerve a fibrositis constituting a true sciatica is distinguished by the fact that the pain is aggravated by putting the nerve on the stretch, while if the pain is due to some other cause it may be relieved by this maneuver. For the treatment of sciatica, cleansing of the *primæ viæ*, regulation of the diet and especially massage are recommended.

The presence of a neuralgia should suggest (1) a fibrositis, (2) an unsatisfactory blood state and (3) the existence of an irritant. The blood state may be anemia, goutiness, toxemia from constipation or other cause. Hygiene, generous diet, especially fats, and iron are the remedies for anemia. The iron should be given in the form of the citrate or tartrate. A useful formula is as follows:

℞. Ferri amon. citrat.....gr. x |6
Liq. arsenicalis.....m. ii |12
Inf. quassiæ .....℥ss 15|

M. Sig.: *Ter die post cib.*

As strength improves this may be used instead of the above:

℞. Ferri et quin. citrat.....gr. xx 1|3
Liq. arsenicalis.....m. v |3
Tr. nucis vom.....m. iv |25
Aquæ aurant. flor.....f℥ss 15|

M. Sig.: *Ter die post cib.*

When giving iron the bowels should be kept open with aloes, which enhances the effect of the iron, or later with cascara. A daily morning dose of a natural mineral water is also very useful. For a direct influence on the pain a combination of quinin gr. v (gm. 0.3) and tr. gelsemium mx (c.c. 0.6) is recommended every twenty minutes till pain ceases or four doses are taken.

For pain in the area of the trigeminus, whether arising from irritation in the mouth or elsewhere, Williams recommends butyl-chloral as one of the best remedies (5 gr. every half hour until pain ceases, not exceeding six doses). A combination with gelseminis is desirable. Aconite liniment is useful locally. For vague pains he has found chlorid of ammonium, gr. 20 (gm. 1.3), combined with tr. cimicifugæ, m 20 (c.c. 1.3), more effectual than any of the above-mentioned remedies.

Williams regards acetanilid as our most valuable and powerful antineuralgic, next to morphin, and thinks that it is not more dangerous when cautiously used than many other drugs which are habitually prescribed. According to him the occurrence of slight cyanosis need not be alarming. [Caution in the presence of such symptoms is, however, the part of wisdom.—ED.] Morphin sometimes is very useful, but not often desirable. Leeches have often a marked effect.

Neuralgia and headache connected with eyestrain are characterized by the fact that they appear as the result of slight defects so that patients will declare that their eyesight is exceptionally good. This good eyesight is made possible, however, by continual contraction of the ciliary muscle, which leads to exhaustion and neuralgia as a consequence. Dizziness, nausea and vomiting and general nervous exhaustion may be secondary effects. Careful examination should be made and errors corrected. Dental irritation may also give rise to headache. The same is true of nasal and aural affections. In migraine careful search should be made for eyestrain and other local lesions, and the physician should also search for cardiovascular changes. If nothing can be discovered, the general nervous sensibility should be reduced by hygiene, diet and the exhibition of bromids.

Headaches caused by mechanical congestion (tight corsets, collars, obstructions in the nose and pharynx) are obviously to be treated by the removal of the obstruction. Headache may be due to change of climate. When the conditions are relaxing quinin and strychnin are efficient. Headache accompanying a cold is usually due to a fibrositis and is to be treated accordingly. Most headaches are due to blood states, such as anemia, toxemia from poisons of specific diseases, alcohol, defective kidney excretion, constipation. As a general rule, not to be too much insisted on, headaches due to toxemia are frontal, while those due to functional nervous troubles have a preference for the vertex. While the salts of potassium are useful diuretics, theobromin or its compound diuretin is the best. It is best given in cachets of 15 to 20 grains three times a day. Where there is reason to suppose that headache is due to vasomotor constriction, liq. trinitrin is very useful. Its effect, however, is transitory, and it should not be frequently repeated. Dr. Williams thinks that it is best given in conjunction with hydrobromic acid, and he advises the following large dosage:

℞. Liq. trinitrin.....m. iv | 25
Acid hydrobrom. dil.....m. xx | 1 | 3
Aquæ .....f℥ss | 15 |

M. Sig.: *Ter die post cib.*

Cannabis indica is useful for the symptomatic treatment of headache. Ross has described a headache which is associated with deficient coagulability of the blood, and yields readily to chlorid of a calcium. In very persistent headaches it is well to blister the nape of the neck and keep the wound open with savin ointment for a week. This sometimes succeeds where other measures fail.

Medicolegal

Competency of Witnesses to Testify to Poisoning.

The Court of Criminal Appeals of Texas says, in Rice vs. State, that it does not believe it required a woman to be an expert in order to be able to know that poison was administered to her through a syringe into her rectum. It was the statement of a fact which, without any personal experience or any expert knowledge, she might state. Again, it says that two physicians were permitted to give their opinion as to the cause of the subsequent death of the woman in question, and both attributed it to strychnin poison. Both of them testified that they had never before come in contact with a case of strychnin poison in their practices, though both were graduates of schools of medicine and had practiced medicine a number of years; that all of their knowledge as to strychnin poison was such as had been acquired from reading the books and study, and from what they had been taught in school. This was objected to on the ground that it was hearsay and incompetent; that said witnesses could not be considered as experts. But the court holds that the testimony was admissible. Nor, in its opinion, does this militate against the proposition that medical works can not be read to the jury either as evidence or as argument. A man, it says, may become an expert from his knowledge of the human system and from his knowledge of strychnin as a poison, without having ever attended a case of poison by strychnin. A man may become an expert from scientific investigation without any practical experience.

No Damages for Anguish from Mutilation of the Dead—Property Rights in Bodies and Skeletons.

The Supreme Court of Oklahoma holds, in Long vs. Chicago, Rock Island & Pacific Railway Company, that the parents of an infant child are not entitled, under the law, to recover damages for mental pain and anguish occasioned by the mutilation of the dead body of such infant. It says that in announcing this rule it has not overlooked the declarations to the contrary by some courts of high standing. These decisions, however, indicate an effort to interpolate into the law for the punishment of a wrong a remedy at the sacrifice of legal principles. The courts which declare the right to recover for mental anguish in a case of this character do so on the assumption that a human corpse is property; not property in the general acceptation of that term, but a sort of quasi (as it were) property—that is, that it so resembles property, in the right of relatives to control and direct its interment, and to have it kept inviolate from negligent or malicious injury, that the law of the rights of property and the remedy for the destruction thereof should be extended to such cases, measuring the injury and the compensation by the mental suffering of the living occasioned by the desecration of the dead. The disposition to protect the bodies of the departed, as indicated by these decisions, appeals to our higher sensibilities, but the rules announced by these courts authorizing recovery for mental anguish alone is, in this court's opinion, largely the result of sentiment, and is in conflict with the common law of the land. It is true that in some countries the bodies of deceased persons have been seized and sold for debt, and, under such a law, they would be property. Greatly to their credit, England and the United States have always considered the decent burial of the dead of more importance than the payment of the debtor's claim. In dealing with the question presented the court has no reference to dead bodies or the skeletons thereof which have been by law properly appropriated for the benefit of science; as, for instance, for medical schools and other institutions of learning. That such are property this court does not deny, because they have an intrinsic value for a particular purpose. Nor is this court inclined to criticise, as some other courts have done, the failure of the lawmaking power to provide for recovery in such a case as here under consideration. The legislature are the judges of the expediency of such a law, and on that question minds might differ, for the legal wrong is against the public and not against the individual. But where a corpse is mutilated, before or after burial, in such a way as to render necessary the expenditure of extra money or labor in caring for it, or where injury is done to the coffin or clothes, the actual damages sustained may be recovered.

Capacity of Children to Commit Rape and Other Crimes.

The Supreme Court of North Dakota says, in the case of State vs. Fisk, that the confusion which existed at common law as to the capacity of children to commit crime has been removed in that state by express statute. Section 8544 of the Revised Codes of 1905, so far as material, provides: "All persons are capable of committing crime except those belong-

ing to the following classes: 1, Children under the age of 7 years; 2, children over the age of 7 years, but under the age of 14 years, in the absence of clear proof that at the time of committing the act or neglect charged against them they knew its wrongfulness." Under this section a child under the age of 7 years is conclusively presumed to be incapable of committing a crime. In this respect it is the same as the common law, both of England and this country. Between 7 and 14, called the dubious age of discretion, the child is still presumed to be incapable, but the presumption is not conclusive. The state may overcome the presumption, but to do so it must show by clear proof that the accused knew the wrongfulness of the act when he committed it. In the absence of such proof the presumption of incapacity must prevail. The burden is on the state in such cases to prove knowledge of the wrongfulness of the act as an independent fact. In this respect the rule is the same as at common law.

The foregoing may be said to refer to mental capacity. But the crime of rape, as well as the crime of assault with intent to commit rape, involves a further element, and that is the physical capacity to commit the offense. In England it was accepted as a fact that a child under 14 had not the physical capacity to commit the offense, and it was, therefore, held from an early day that the presumption of incapacity was conclusive. Evidence to show capacity was not admissible. In this country several states followed the English common-law rule. Williams vs. State, 20 Fla. 777; McKinny vs. State, 29 Fla. 565; State vs. Sam Wrist, 60 N. C. 294; State vs. Pugh, 52 N. C. 61; Foster vs. Com. (Va.), 31 S. E. Rep. 503; State vs. Handy, 4 Har. (Del.) 566. See also Com. vs. Green, 2 Pick. (Mass.) 380. The courts of other states, and with considerable unanimity, were of opinion that the English rule was not suited to this country on account of the difference in condition, the age of puberty apparently coming earlier, and held that the presumption of physical capacity was not conclusive, but that it may be overcome by proof that the defendant has reached the age of puberty and was capable of consummating the crime. People vs. Randolph (N. Y.), 2 Parker Cr. R. 174; Williams vs. State, 14 Ohio, 222; Hiltabiddle vs. State, 35 Ohio St. 52; Gordon vs. State, 93 Ga. 531; Wagoner vs. State, 5 Lea (Tenn.), 352; Heilman vs. Com., 84 Ky. 457; State vs. Jones, 35 La. Ann. 935.

The law in this state (North Dakota) is settled by statute in favor of the rule laid down in the cases just cited. Section 8891 of the Revised Codes of 1905 reads: "No conviction for rape can be had against any one who was under the age of 14 years at the time of the act alleged, unless his physical ability to accomplish penetration is proved as an independent fact, and beyond reasonable doubt." In prosecution of persons between the ages of 7 and 14, for rape or an attempt to commit rape, the burden is on the state to show the mental and physical competency of the defendant. In the absence of such proof the presumption of incompetency must prevail.

As applied to assaults with intent to commit rape by children between 7 and 14 years of age, the rule is that where physical capacity to consummate the offense is not shown, there can be no conviction for an assault with intent to commit it. There being no ability to commit the rape, the intent is merely a thought or desire, which could not in the nature of things produce any result, the highest offense of which the party is capable being a mere assault and battery. The only case holding a contrary view which has come to this court's notice is Com. vs. Green, 2 Pick. (Mass.), 380, in which it is held that the want of physical ability to consummate the offense will not defeat a conviction for an assault with intent to commit it.

In the case of an adult, impotency is a defense against the consummated offense of rape. But the courts differ when the charge is an attempt. See Territory vs. Keyes, 5 Dak. 244. In that case it was held that the impotency of a grown man is no defense in a prosecution for assault with intent to commit rape, in the absence of proof that the defendant knew that he was impotent. In the present case, a prosecution of a boy under 14 years of age, there was legal incompetency. The question of impotency was not involved.

Current Medical Literature

AMERICAN.

Titles marked with an asterisk (*) are abstracted below.

Medical Record, New York.

October 6.

1 *Three Ureters Demonstrated During Life; Ureter Catheterization Giving Three Different Urines, One Infected with Gonococci. B. Lewis, St. Louis.
2 *Axioms in the Treatment of Cancer of the Rectum. C. B. Kelsey, New York.
3 Treatment of Symptoms, a Rational and Scientific Procedure. G. F. Butler, Chicago.
4 *Effect of Blowing on Wind Musical Instruments with Special Reference to Tuberculosis. J. F. Rogers, New Haven, Conn.
5 *Appendicitis. J. J. Brownson, Dubuque, Iowa.

1. **Three Ureters Demonstrated During Life.**—Lewis gives the history of this patient, a man, 24 years old. Even after the most careful and persistent treatment, the condition of urethral gonorrhea proved very rebellious. During the writer's examinations it was noted that, as a rule, the organisms were not so numerous in either the urethral discharge or that pressed from the prostate as they were in the sedimentations from the urine. On inserting the rectangular cystoscope into the bladder two ureter openings were observed to the left of the median line. The normal opening was seen on the right side. The ureters were identified by passing up into them ureter catheters filled with lead fuse wire. An *x*-ray photograph was then taken. Only one of the two left-sided ureters was infected.

2. **Axioms in Treatment of Cancer of Rectum.**—Kelsey believes that in every suitable case of cancer of the rectum the patient should be subjected to immediate excision or resection by some one of the half-dozen well-recognized varieties of the operation. In every other case, he considers such only as allow of complete removal of the disease with no more risk than attends any other major surgical operation. The mortality rate depends on the choice of cases and on the operator. There is no one operation that is applicable to all cases. The site of the growth must be the controlling factor. Kelsey describes the method which he has found satisfactory.

4. **Effect of Blowing on Wind Musical Instruments.**—Rogers states that the outflow of lymph is hastened, especially from the lung tissue; the heart sounds and beats are not materially altered except by extreme pressure; the gaseous interchange in the lungs must be facilitated at least temporarily; the effects of changes of pressure on the circulation and movements of the abdominal organs are pronounced; the amount of muscular strength required varies with the instrument and character of performance. Opinion among musicians seems to be about equally divided as to the frequency of tuberculosis among such musicians. The professional musician who has contracted tuberculosis would better adopt some less taxing work when the quality or quantity of his work makes too much demand on his general vitality, and when his surroundings as to ventilation or dust are bad, he should find a place entailing less danger.

5. **Appendicitis.**—Brownson says that the operation for appendicitis ought to be done in the primary stage or before the high-fever period. The appendix should be removed, to guard against fulminating cases and those in which rupture occurs into the abdominal cavity. In the secondary period, after suppuration, drainage should be instituted and Nature left to take care of the appendix. In the interval, after all symptoms of inflammation have subsided, the appendix should be removed. The operation ought not to be done in the intermediary period when there is fever and distension of the abdomen, because the danger from operation at this period is greater than the risk of the case becoming fulminating, or the abscess bursting into the abdominal cavity.

New York Medical Journal.

October 6.

6 *Functions of the Cerebellum and Symptoms of Its Disease. C. L. Dana, New York.
7 Progressive Muscular Atrophy of Cervicobulbar Type Occurring with Cervical Rib. W. G. Spiller and J. C. Gittings, Philadelphia.

8 *A Practical View of Tent Life in the Southwest. E. E. Elliott, E. Las Vegas, N. M.
9 *Note on Peculiar Attitudes in Epilepsy During Sleep. N. B. Roos, Binghamton, N. Y.
10 *Supracondyloid Fracture of the Humerus. C. C. Page, New York.
11 *Differential Diagnosis of the Acute Infectious Diseases. F. H. Dillingham, New York.
12 Relations of Gastric Ulcer to Gastric Cancer. M. R. Barker, Chicago.

6. Functions of Cerebellum.—Dana calls attention to the general subject of the functions of the cerebellum, and then to the morbid phenomena caused especially by other conditions and tumors, such as hemorrhages, softenings, degenerative sclerotic and functional disturbances. He reports 6 illustrative cases.

8. Tent Life in the Southwest.—Elliott says that the Southwest with its pure, dry, warm air and tent life can do good to all tuberculous patients, can do much for many, and can work wonders for a few, but that to get the greatest benefits in the shortest time the patient must be placed right at the start and he told what to do and what not to do at all times.

9. Attitudes in Epilepsy During Sleep.—In the men's infirmary at the Craig Colony, Ross has observed a peculiar similarity of posture during sleep in a large number of the male patients. Many of them sleep curled up, the head being bent forward until it rests securely on the knees, which are drawn up. Many of these low-grade patients invariably cover their heads entirely with blankets. Others sleep in a sitting posture night after night the year round, while still others simply brace the head against the pillow as it stands on edge at the head of the bed. Others sleep flat on the abdomen, while still others sleep with their arms above the head, the fingers clasped and supporting the head in this manner. Some sleep with their heads resting on elbows and hands, while others sleep in a posture in which the head is flexed until it touches the breast, without giving any support whatever to the head. Ross thinks this observation is interesting chiefly from the fact that all patients who assume these extraordinary attitudes during sleep have practically no mentality, standing but little if any above animals in this respect.

10. Supracondyloid Fracture of the Humerus.—Page reports a case which illustrates the excellent results obtained by the prompt reduction and accurate replacement of the fragments in a supracondyloid fracture of the left humerus.

11. Diagnosis of Acute Infectious Diseases.—In this paper Dillingham considers particularly the diagnosis of the less typical cases of smallpox, chickenpox, measles, scarlet fever and typhoid fever.

Boston Medical and Surgical Journal.

October 4.

13 *Future of the Medical Profession. C. W. Eliot, Boston.
14 *Unity of the Medical Sciences. W. H. Welch, Baltimore.
15 *Hysteria from the Point of View of Dissociated Personality. (To be continued). M. Prince, Boston.
16 *The Ulnar Nerve as a Landmark of the Elbow. F. J. Cotton, Boston.

13, 14.—See THE JOURNAL, Oct. 6, 1906, page 1115.

15. Hysteria.—Prince presents a study of certain well-known types of hysteria from the point of view of dissociated or disintegrated personality, and, conversely, dissociated personality from the point of view of hysteria, taking into consideration only such manifestations as may be observed by the clinician, without consideration of the psycopathologic changes which underly hysteria and multiple personality. The article is to be continued.

16. Ulnar Nerve as Landmark.—Clinical experience has convinced Cotton that the ulnar nerve serves admirably as a landmark of the elbow. Particularly it is of value in the common and often overlooked fractures or epiphyseal separations of the internal epicondyle. It is very rarely that the ulnar nerve is displaced.

St. Louis Medical Review.

September 29.

17 Mouth Cleanliness. M. A. Smale, London, England.
18 Origin and Heredity of Matter. J. Wright, New York.

The Laryngoscope, St. Louis, Mo.

September.

19 *Herpes Zoster Auris. D. T. Vail, Cincinnati.
20 *A New Operation for Extreme Cases of Septal Deflection, with Presentation of a Successful Result in an Adult Case. J. Price-Brown, Toronto.
21 Blood-Clot Method of Wound Repair in Aural Surgery. F. B. Sprague, Providence, R. I.
22 *Infective Sigmoid-Sinus Thrombosis, Resection of Internal Jugular. H. B. Ellis. Los Angeles.
23 *Mixed Tumor of the Soft Palate. T. H. Halsted, Syracuse, N. Y.
24 *Case of Polypoid Lipoma of the Tongue. A. O. Pfingst, Louisville, Ky.
25 Faucial Pillar Retractors. A. R. Solenberger, Colorado Springs, Colo.
26 Case of Epileptiform Hysteria, Probable Result of Necrosing Ethmoiditis. W. W. Bulette, Pueblo, Colo.
27 *Case of Submucous Hemorrhage of the Right Vocal Cords. O. Wilkinson, Washington, D. C.
28 *Perforation of the Septum Naris. C. W. Richardson, Washington, D. C.
29 *Frontonasal Encephalocele. F. E. Hopkins, Springfiel. Mass.
30 Removal of An Open Safety Pin from the Esophagus. F. L. Stillman, Columbus, Ohio.
31 Two Cases of Bone Impacted in the Larynx. J. M. Ingersoll and D. P. Allen, Cleveland, Ohio.
32 Papilloma of Larynx from Inhalation of Flames. A. B. Thrasher, Cincinnati.
33 A Rare Form of Tubercular Laryngitis, Tubercular Web Between the Vocal Cords. S. Rosenheim, Baltimore.

19.—See abstract in THE JOURNAL, July 28, 1906, page 299.

20. **Id.**—Oct. 6, 1906, page 1137.

22. **Id.**—July 21, 1906, page 230.

23. Mixed Tumor of Soft Palate.—Halsted reports the case of a man, aged 55, who had a swelling in the throat for at least 20 years. Various diagnoses had been made by the physicians consulted and the majority advised removal, although a few of them strenuously advised against any surgical interference. Following an acute attack of pharyngitis and laryngitis, the patient submitted to having the tumor removed. It was encapsulated, as hard as a bone, but in its center were several small cystic cavities. On microscopic examination the tumor was found to be a typical example of the mixed tumors of the salivary glands, the so-called cylindromata. Seven months after the operation the tumor had not returned.

24. Polypoid Lipoma of Tongue.—The patient concerned in the report made by Pfingst was a girl, aged 14½. Attached to the tongue at a point corresponding to the foramen cecum was a large pedunculated mass of a shape which could be compared to a fetal chicken or duck. It had a smooth though slightly irregular surface, was pink in color, and rather firm to the touch. The tumor was first noticed when the patient was about two weeks old. The growth was removed by snaring it close to the base with a Peters snare. Hemorrhage, though profuse for two or three minutes, subsided in ten minutes and the patient made a good recovery. The mass of the growth was made of true adipose tissue, with rather large cells irregularly arranged, and was characterized by an abundance of thin-walled vessels.

27. Submucous Hemorrhage of Right Vocal Cord.—The special feature in the case reported by Wilkinson is that the hemorrhage came on in a perfectly healthy woman, aged 50, without any apparent exciting cause. The treatment consisted of mild oil sprays at first, with one or two applications of 2 per cent. nitrate of silver solution, and an injunction not to use the voice.

28. Perforation of Nasal Septum.—Richardson reports 15 additional cases of perforation of the nasal septum in which there was no known etiologic factor and an indefinite pathologic history. An analysis of these 15 cases showed that in 11 there was either the direct physical evidence of tuberculosis in the affected individual, or that the perforation took place in an individual who, it might be said, had a well-marked family history of tuberculosis. These 15 cases, added to the 17 reported in a previous paper, make 32 cases with a total of 22 cases in which tuberculosis was more or less in evidence, with 10 without such evidence. Richardson believes that this occurrence of 66 per cent. of perforation in individuals of a tuberculous or tubercular predisposition must be more than a mere pathologic coincidence.

29. Fronto-Nasal Encephalocele.—The case reported by Hopkins differs from cases reported previously in that the symptoms were almost wholly nasal. The patient was 11 months

old and presented a small swelling over the right nasal bone, which was present at birth and had been diagnosed as a cyst. Relief was sought because of obstruction to nasal respiration in the right fossa. On examination the right fossa was found to be occluded by a tumor projecting in the vestibule, having its attachment apparently to the outer wall near the anterior end of the inferior turbinate. The small mass was removed with a cold wire snare and the supposed pedicle trimmed down smoothly with a pair of cutting forceps. Examination of the deeper parts of the fossa by reflected sunlight revealed a globular tumor at the level of the middle turbinate about five-eighths of an inch in diameter, perfectly smooth, of a grayish color and semi-translucent. Pressure made with a cotton-tipped probe against the globular tumor within the nose caused an increase in size of the external one, while pressure with the finger externally was conveyed to the mass within. Diagnosis of cerebral hernia was made, and as no operation promised relief nothing further was done. The child became ill on the fifth day, and at the end of two weeks died of meningitis.

Annals of Surgery, Philadelphia.

September.

34 Serumtherapy of Tetanus. N. Jacobson, Syracuse, N. Y., and H. D. Pease, Albany, N. Y.
35 *Treatment of Tetanus by Magnesium Sulphate. J. A. Blake, New York.
36 Early Operation in Traumatic Intracranial Hemorrhage. F. W. Murray, New York.
37 *Case of Tumor of the Carotid Body. J. C. Da Costa, Philadelphia.
38 *Shortening of the Round Ligaments of Subperitoneal Ventro-Aponeurotic Fixation. J. M. Fisher, Philadelphia.
39 *An Experimental Study of Suture of Arteries with a Description of a New Suture. G. M. Dorrance, Philadelphia.
40 *Combined Superior Tibio-fibular and Astragalo-fibular Osteoplasty as a Means to Prevent Shortening of the Leg After Extensive Osteomyelitis of the Tibia Occurring During Adolescence. N. Kerr, Chicago.
41 *Relation of the Technic of Nurses and of Hospital Apparatus to the Healing of Wounds. C. P. Noble, Philadelphia.

35.—See abstract in THE JOURNAL, July 14, 1906, page 146.

37. **Tumor of Carotid Body.**—Da Costa reports a case in which removal of the tumor was followed by hemiplegia. He points out that the operation of removing a carotid tumor is an extremely dangerous one and is not to be undertaken lightly. Every tumor in this region of the neck should be examined very carefully so that the surgeon will not be led into operating for some supposedly trivial condition and then find himself suddenly so far advanced in attacking a carotid tumor as to necessitate tying all the carotids. In his case, eight weeks after the operation, the hemiplegia seemed to be fading. [This case was referred to in the article on this subject by Drs. Keen and Funke, in THE JOURNAL A. M. A., Aug. 18-25, 1906.—ED.]

38. **Shortening of Round Ligaments.**—The operation to which Fisher refers is the one devised by Dr. E. E. Montgomery.

39. **Sutures of Arteries.**—In the method described by Dorrance attention is called to the following advantages: 1, The suture does not protrude in the lumen of the artery; 2, fibrin ferment can not get from the ends or cut surfaces of the artery into the blood stream; 3, the liability to secondary hemorrhage is lessened by the double line of suture. Disadvantages have not been observed. Pagenstecher's thread No. 1 is used in the finest sewing-needle the thread will pass through. The clamps used are very limber-bladed forceps, devised especially for this work in order to avoid crushing the intima. The blades are covered with rubber tubing. Dissecting forceps are used to hold the edges of the artery. The suture can be used for a longitudinal, oblique or transverse (complete or incomplete) cut in the artery. When suturing a longitudinal cut the clamps are applied 2.5 cm. above and below the cut. The suture is started 1.5 mm. above the cut edge, the suture is passed through the outer two coats and tied, the end of the suture is grasped by a hemostat, the needle is next passed through all the coats of the artery on both sides 1.5 mm. below the first suture and 1.5 mm. from the cut edge; the suture from now on is a continuous mattress suture with the dropping back one-half a suture length every third suture until the end of the incision is reached, then the suture is passed through the outer two coats 1.5 mm. below the lower end of the cut and a half-hitch made to tie the suture. The same suture is continued as a whip-stitch over the edges of the artery outside of the mattress suture until the starting point is reached, when the two ends of the suture are tied. The artery is grasped in a gauze pad, the distal clamp removed, then the proximal clamp and the artery is dropped back in place and the deep fascia sutured around the line of approximation. The method of suturing an oblique cut is practically the same as for the longitudinal.

40. **Osteoplasty.**—The principal point in the case reported by Kerr, and the one which he believes to be of value in properly selected cases, is the substitution of the fibula for the tibia as the pressure bearing bone, in order that continued growth in the length of the leg may be maintained. Kerr concludes that the periosteum can be relied on to regenerate new bone; that it is not necessary to wait for two or two and a half months for evidences of repair on the part of this membrane, and that it is even better to remove the shaft of the tibia entirely just as soon as one feels satisfied that the vitality of the involved bone is sacrificed; that on account of the difficulties of rendering the parts sufficiently aseptic, through-and-through drainage either with gauze or tubes should be instituted just preliminary to the suturing of the edges of the periosteum together.

41. **Sources of Wound Infection.**—The points to which Noble directs attention are: 1. Whether surgeons should be satisfied with the policy of giving verbal directions to head nurses about the disinfection of hospital apparatus and the technic of nurses as applied to the treatment of wounds; or, whether each hospital should adopt a routine technic which should prescribe the methods which are to be followed, thus avoiding any possibility of error on the part of the head nurse and pupil nurses. 2. The importance of preventing the infection of the hands of nurses by the elimination of all possible sources of contamination, through proper regulations as to the cleansing and disinfection of wards, rooms, furniture and apparatus employed by the nurses. 3. The adoption of a proper technic for the disinfection of nurses' hands. 4. The installation of proper sterilizers, which will enable nurses to sterilize the apparatus used by them as efficiently as is done in operating rooms at the present time.

Virginia Medical Semi-Monthly, Richmond.

September 21.

42 *Two Cases Illustrating the Value of the Ophthalmoscope as an Aid in the Diagnosis of the Cause of Brain Lesions. J. Dunn, Richmond.
43 Gonorrhea. R. A. Gamble, Petersburg, Va.
44 *The Lingual Tonsil. J. P. Davidson, Richmond.
45 Tuberculosis—Its Etiology—Prophylaxis and Treatment. G. Armstrong, Staunton, Va.
46 Cough in Consumption and Its Management. W. H. Coffman, Asheville, N. C.

42. **Value of Ophthalmoscope in Diagnosis of Brain Lesions.**—The two cases reported by Dunn are, one of isolated supranuclear paralysis of the seventh nerve, and one of left-sided hemianopsia. Both patients sought relief from what they supposed was some eye trouble. Ophthalmoscopic examination disclosed the real condition.

44. **Lingual Tonsil.**—Davidson believes that the lingual tonsil often is responsible for persistent hacking or spasmodic cough, and that these symptoms can be relieved promptly by local applications to the tonsil rather than by the administration of sedative cough mixtures.

Journal of the Minnesota State Medical Association and the Northwestern Lancet, Minneapolis.

September 15.

47 The Lymphatics in Appendicitis. E. P. Quain, Bismarck, N. D.
48 *Skin-grafting; Modified Open Method. W. D. Kelly, St. Paul.
49 *Tuberculosis. H. M. Bracken, St. Paul.
50 Anaërobic Cellulitis, or Infectious Emphysema. J. W. Little, Minneapolis.

48. **Skin Grafting.**—Kelly employs local anesthesia and prepares the skin by washing it with sterile water or normal saline solution. A double-edged spatula knife is used to take grafts, by following a flat piece of board upward toward the imbedded hook with a sawing motion. In this way a very wide and as long a graft as required can be made. The skin graft should be made as thin as possible. The graft is placed

on a flat holder and immediately placed on the granulating surface. If the open wound is of recent date and granulating surfaces appear healthy, even if a discharge be present, it will be unnecessary to curette or to disturb the wound in any way, except to wash it carefully with normal salt solution or sterile water. If, however, the granulations are spongy, soft, or pale it is well to use a blunt curette to freshen up the surfaces of the wound. All bleeding should be stopped, and the blood clot removed before grafts are applied. In placing the grafts they should be smoothed out on a spatula or flat spoon, and applied with the follicles and the hair running in the same direction as the hairs of the parts around the wound. The spaces under the graft, when applied, should be obliterated, and the grafts made to agglutinate closely to the granular surface, which may be accomplished by using a rolled piece of gauze. After application of the graft this gauze is rolled on the graft, either upward or downward, until the graft gives an appearance of translucency, and the appearance of sticking or drawing in closely to the bottom of the wound. The dressings used on portions of body other than limbs are usually a thick piece of sterile gauze, placed on either side of the wound and held in place by strips of oxid of zinc plaster, which plaster is held far above the wound by the gauze. A single strip of gauze is placed over the entire wound, over the above dressing, and held in place by two oxid of zinc straps. In this way the patient or any one else is prevented from infecting the grafted side. The modified open dressing is usually completed by a single strip of gauze over the entire dressing. This dressing usually remains in place for four or five days, and if, at the expiration of this time, it is necessary to remove it, this can be done by cutting the dressing at right angles. The wound can then be dressed, and if blebs are formed they should be incised with either scalpel or scissors and simply washed with a disinfectant solution, but not irrigated.

49. **Tuberculosis.**—Bracken sums up the important points in the control of tuberculosis as follows: 1. An early diagnosis of the disease. In this the responsibility is about equally divided between the patient and the physician. 2. The education of the people, in order that they may know that tuberculosis is both a preventable and a curable disease. 3. The recognition of the fact that the general practitioner and the sanitary authorities must work together in the care of those cases which have become centers of infection, viz., cases with the tubercle bacillus present in the sputum. 4. The necessity for the proper care of tuberculous patients either at their homes or in sanatoria, in order to prevent the infection of others. 5. The necessity of considering the protection of the uninfected as an important factor in the control of tuberculosis. 6. The even greater necessity of caring for advanced or incurable cases than for the mild curable cases, if the disease is to be brought under control. 7. The creation of conditions to meet all requirements in the care of the tuberculous, embracing sanatoria, district nursing, dispensaries, etc. 8. The formation of antituberculosis organizations, to take an interest in raising funds and in aiding in providing for the proper care of the tuberculous. 9. The recognition of the fact that medication is but a small factor in the control of tuberculosis, while good hygienic surroundings for the patient, together with the proper prophylactic measure for the uninfected, are of the greatest importance in the control of this disease.

Fort Wayne Medical Journal-Magazine.

September.

51 Etiology, Transmission and Diagnosis of Scarlet Fever. E. M. Van Buskirk, Ft. Wayne.
52 *Gonorrheal Lesions Other Than of the Genital Tract. A. Kane, Ft. Wayne.

52. **Gonorrheal Lesions.**—Kane discusses the gonorrheal affections of the endocardium and of joints, but offers nothing new.

The Postgraduate, New York.

September.

53 Presentations of Specimens. S. S. Graber, New York.
54 Vincent's Bacillus and Spirillum, the Causal Agent of Chronic Suppurative Otitis Media Necessitating Radical Operation—Meningitis—Death. R. J. Held, New York.
55 Nauheim Bath in Gynecology. S. W. Bandler, New York.

Louisville Monthly Journal of Medicine and Surgery.

September.

56 Neuroses of the Intestine. J. Glahn, Owensboro.
57 Treatment of Doctors. A. F. Knox, Bowen.
58 Items of Interest. E. S. McKee, Cincinnati, Ohio.
59 Acute Autointoxication from Fecal Stasis. W. F. Waugh, Chicago.
60 Case of Hydrophobia. I. A. Arnold, Meadow Lawn.
61 Treatment of Chorea. R. B. Gilbert, Louisville.
62 Seminal Vesiculitis. J. T. Windel, Louisville.
63 Phases of Surgical Shock. T. L. Butler, Louisville.

Journal of the Kansas Medical Society, Lawrence.

September.

64 Absurd Verdicts in Cases of Insanity—Unfitness of Jury System. B. D. Eastman, Topeka.
65 Plea for the Earlier Diagnosis and Treatment of Epilepsy. M. L. Perry, Parsons.
66 Dementia Præcox. T. C. Biddle, Topeka.
67 Paranoia. L. L. Uhls, Osawatomie.
68 Toxic Psychoses. C. C. Goddard, Leavenworth.

Journal of the Arkansas Medical Society, Little Rock.

September 15.

69 Cases of Version. M. G. Thompson, Hot Springs.
70 Hemorrhage from Uterus During Gestation. J. T. Clegg, Siloam Springs.

Medical Examiner and Practitioner, New York.

September.

71 Early Diagnosis and Prognosis of Pulmonary Tuberculosis. S. A. Knopf, New York.
72 The Vagus Reflex a Diagnostic and Prognostic Sign in Life Insurance Work. T. J. Mays, Philadelphia.
73 Features of Chest Examination of Interest to Life Insurance Examiners. J. M. Patton, Chicago.
74 Tuberculosis: Its Consideration in Relation to Risks in Life Insurance. W. M. Hilton, Waverly, N. Y.

Vermont Medical Monthly, Burlington.

September 15.

75 Primary Pernicious Anemia. C. H. Beecher, Burlington.
76 Angina Pectoris. A. C. Bailey, Randolph.
77 Jaundice. M. L. Chandler, Barre.

Medical Fortnightly, St. Louis.

September 25.

78 Internal and External Urethrotomies. R. Harrison, London, England.
79 Our Duty to Prospective Medical Students. A. L. Benedict, Buffalo.

The Therapeutic Gazette, Detroit, Mich.

September 15.

80 The Diet of Childhood. D. J. M. Miller, Philadelphia.
81 Results of Treatment in Ninety-Four Cases of Pulmonary Tuberculosis. F. M. Pottenger, Monrovia, Cal.
82 Progress in Serumtherapy During the Year Ending June 1, 1906. E. R. Larned, Chicago.
83 Report of the Management of Tuberculous Patients Applying for Treatment to the Dispensary of the Samaritan Hospital, Philadelphia. M. R. Taylor, Philadelphia.
84 Present Status of Operative Intervention in Exstrophy of the Bladder. A. P. M. Vance, Louisville, Ky.

Brooklyn Medical Journal.

September.

85 Honors That Have Come to the Medical Profession in America. W. Schroeder, Long Island.
86 Nasal Malformations and Diseases of the Nasal Accessory Sinuses. C. W. Stickle, Brooklyn.
87 Address to the Graduating Class of the Methodist Episcopal Training School for Nurses, May 31, 1906. W. F. Campbell, Brooklyn.

Southern California Practitioner, Los Angeles.

September.

88 The Physician's Duty to His Fellow Practitioner. W. Lindley, Los Angeles.
89 European Surgery. A. S. Lobingier, Los Angeles.
90 Electrical Apparatus and Therapy. A. Soiland, Los Angeles.
91 Extrauterine Pregnancy. M. A. Rodgers, Tucson, Ariz.
92 Our Duties as Citizens in the Prevention of Tuberculosis. G. H. Kress, Los Angeles.

St. Paul Medical Journal.

October.

93 Dermatitis Exfoliativa. B. Foster, St. Paul.
94 Homicide by Aconite Poisoning and the Quantitative Distribution of Aconitina in the Human Body 317 and 385 Days After Death. H. C. Carel, Minneapolis.
95 Pyelitis. H. Peddicord, St. Paul.
96 Etiology and Pathology of Acute Septic Osteomyelitis. W. A. Dennis, St. Paul.

Journal of the Medical Society of New Jersey, Orange.

October.

97 Metastatic Panophthalmitis. C. J. Kipp, Newark.
98 Results of Dr. Allport's Plan of Examination of the Eyes and Ears of Public School Children in the Oranges. L. Emerson, Orange.
99 Edema of the Larynx; Two Cases Associated with Acute Septic Disease of the Throat. F. C. Ard, Plainfield.
100 Tendency of the Organism to Limit Pulmonary Tuberculosis. T. Senseman, Atlantic City.

Mississippi Medical Monthly, Vicksburg.

October.

101 Advantage of an Early Operation in Appendicitis. H. T. Inge, Mobile, Ala.
102 Biliousness. H. H. West, Biloxi.
103 La Grippe. J. T. Longino, Jonestown.

California State Journal of Medicine, San Francisco.

August.

104 Gastroenteric Autointoxication: Its Recognition and Significance and Its Relation to Arterial Hypertension. W. A. Briggs, Sacramento.
105 Pain. E. R. Wagner, San Jose.
106 True Sciatica and Diseases of the Posterior Urethra and Adnexa. G. S. Peterkin, Seattle, Wash.
107 Choice of Anesthesia. H. L. Parish, Calistoga.
108 Local Anesthesia. T. C. Edwards, Salinas.
109 Conservative Treatment of Hip Disease. S. J. Hunkin, San Francisco.

Journal of the South Carolina Medical Association, Greenville.

September 21.

110 Unjustifiable Hysterectomy. M. Simons, Charleston.
111 Recent Meeting of the British Medical Association in Toronto, Ontario. W. P. Porcher, Charleston.
112 Intestinal Origin of Tuberculosis of the Tracheobronchial Glands. A. Calmette, C. Guerin, and A. Delearde, Charleston.
113 Our Medical Law. M. R. Baker, Columbia.
114 The County Medical Society and Its Benefits to the Medical Profession. O. B. Mayer, Newberry.

Journal of the Outdoor Life, Saranac Lake, N. Y.

October.

115 The Error of Climate in the Treatment of Tuberculosis. J. W. Kime, Ft. Dodge, Iowa.
116 The Barlow Sanatorium of Los Angeles, Cal. G. H. Kress, Los Angeles.
117 Winter Amusements in Arizona. H. H. Stone, Phoenix, Ariz.

Kentucky Medical Journal, Louisville.

October.

118 Intussusception. J. B. Bullitt, Louisville.
119 Ectopic Pregnancy. A. W. Cain, Somerset.
120 Advantages and Disadvantages of Being a Physician. J. E. Wells, Cynthiana.
121 Postoperative Intestinal Obstruction Consequent on Visceral Stab Wounds of Abdomen. R. C. Falconer, Lexington.

The Canada Lancet, Toronto.

October.

122 Thoughts on a Decade in Medicine. E. A. Reeve, Toronto.
123 *Circulation Viewed from the Periphery. J. Barr, Liverpool, England.
124 *Technic of Operations on the Central Nervous System. V. Horsley, London, England.
125 Meeting of the British Medical Association in Toronto, August 21-25, 1906. J. Hunter, Toronto.
126 Application of Physical Chemistry to Serum Pathology. W. H. Manwaring, Toronto.

123, 124. See abstracts in THE JOURNAL, Sept. 1, 1906, page 706.

FOREIGN.

Titles marked with an asterisk (*) are abstracted below. Clinical lectures, single case reports and trials of new drugs and artificial foods are omitted unless of exceptional general interest.

British Medical Journal.

September 22.

1 Protection and Control of the Milk Supply. R. Harcourt.
2 Sanitary Control of the Milk Supply. J. Glaister.
3 Protection and Control of Milk Supplies. H. C. Pattin.
4 Hygiene of the Home. J. J. Cassidy.
5 Medical Inspection of Children Attending Elementary Schools, H. MacMurchy.
6 Medical Inspection of Schools. W. Scott.
7 Present Status of Antituberculosis Work in Canada. J. H. Elliott.
8 *Significance of Some Enlargements of the Thyroid Gland. A. F. Martin.
9 *Simulation of Mastoid Disease. S. Paget.

8. **Significance of Enlargement of Thyroid.**—Martin attempts to explain the occurrence of some simple enlargements of the thyroid gland to which he gives the name thyreocele, a term first used by Robinson. Based on a careful study of a large number of cases, Martin concludes that a call for increased functional activity is sufficient cause for simple enlargement of the thyroid gland. Such a call is frequently given by the metabolism of the organism in connection with growth and development, with a performance of the uterine functions in the female, and with the chlorotic conditions of young girls. The phases of enlargement of the thyroid included under the term thyreocele are a response to such an appeal from one or more of the above causes in an individual which thyroid function is performed feebly. As undue physiologic activity is a potent cause for pathologic change, so this simple hypertrophy, when necessitated for prolonged periods, lays the foundation of the pathogenesis of the degenerate cystic and an adenomatous bronchocele. There is often some influence exerted by heredity on the thyroid function.

9. **Simulation of Mastoid Disease.**—In two cases seen by Paget, the signs of acute mastoid inflammation were feigned. The patient in each case was a nurse. One patient, a nurse in a fever hospital, had been subject for some months to a very slight discharge from the left ear. She complained of pain behind the ear. A few weeks later the temperature began to rise every evening, and at the end of a week it was 103. The patient was admitted to the hospital with a view to operation, but on taking the temperature it was found to be normal in the mouth and 104 under the arms. After a week or ten days the temperature became steady, the patient ceased to complain of pain and seemed to be in perfect health.

The other patient, a nurse in a convent, had a very slight chronic discharge from the left ear, and, like the first patient, had complained greatly of pain behind the ear. It was known of her that she was hysterical, and that she was in the habit of taking chloral. On her admission to hospital she had the appearance of a case of meningitis or of cerebral abscess. She lay in bed, day after day, in a state of lethargy, her eyes closed, her hands not moving. She seemed hardly to hear what was said to her, and, when she did answer, it was in a faint whispering voice, very slow. From time to time she moaned, complaining bitterly of pain, and flinching at the very lightest touch behind the ear; but mostly she lay like a log and seemed unconscious of all that was going on around her. Day after day she remained in this extraordinary state for nearly a fortnight. At the end of that time she began to have rapid convulsive up-and-down movements of the right hand and forearm, the side opposite to the affected ear. The mastoid was opened but no pus was found. The patient slowly became more natural and eventually left the hospital in fairly good health. A year later she had been admitted to another hospital with the same set of symptoms.

The Lancet, London.

September 22.

10 *Early Diagnosis of Cancer of the Stomach. C. M. Moullin.
11 A Study of the Streptococci Pathogenic for Man. F. W. Andrewes and T. J. Horder.
12 *Successful Treatment of a Case of Thoracic Aneurism Threatening to Rupture Externally. E. E. Young.
13 Concussion of the Spine, with Some Remarks on Concussion in General. E. M. Corner.
14 *Boric Acid Relative to Appendicitis. R. Harrison.
15 *Case of Osteitis Deformans with Huntington's Chorea. C. Mackey.
16 *Stammering and Its Treatment. R. A. Worthington.
17 *Phlegmonous Cholecystitis. G. A. Wright.

10. **Early Diagnosis of Stomach Cancer.**—Moullin believes that the chief reason why the results of operation for carcinoma of the stomach are not better than they are is that the diagnosis is not allowed to be made sufficiently early and that direct palpation through an incision is not resorted to at the first suspicion. If the existence of a cancer is suspected an operation should be done immediately.

12. **Successful Treatment of Thoracic Aneurism.**—Young reports the marked success attending the treatment of an interesting and apparently hopeless case of thoracic aneurism which had threatened to rupture externally. The skin covering the tumor, which was located in the median line of the neck, reaching from the level of the lower border of the third rib to just above the level of the lower border of the thyroid cartilage, was extremely thin, tense and shiny, looking like an abscess on the point of bursting. The patient was put to bed and kept absolutely quiet. The diet was restricted as far as possible, and all stimulants were withheld. Iodid of potassium was administered internally, in doses of 10 grains, three times a day, the dose being increased so that by the end of the third week 60 grains were being taken three times a day. Collodion was painted all over the surface of the tumor every night and morning. The patient began to improve from the commencement of the treatment, until in the ninth week he was well enough to assist in the work of the hospital ward. The

tumor was very much smaller, there was scarcely any visible expansile pulsation and the overlying skin was normal. The patient returned to his work.

14. **Boric Acid in Appendicitis.**—Harrison believes that boric acid may be a cause of appendicitis by reason of its inducing the severe digestive disturbances which always precede an attack of appendicitis.

15. **Osteitis Deformans with Huntington's Chorea.**—Mackey's patient was 57 years of age and began to suffer from twitchings 12 years ago. Twenty-six years ago he sustained a severe injury to the spine. The interesting feature in the case is the association of osteitis deformans and Huntington's chorea in the same patient. There appeared to be no malignant growth present in any other part of the body. Owing to the spasmodic contractions which the patient's muscles underwent it was found impossible to take satisfactory skiagrams of his bones.

16. **Treatment of Stammering.**—The general principles of the treatment of stammering are summarized by Worthington as follows: 1. Remove, as far as possible, any local physical inferiority in any of the organs concerned in speech. 2. Determine in what part of the mechanism the disturbance primarily arises and which of the phenomena are secondary. 3. Ignore the latter, but devise exercises of the second class for the former. 4. Endeavor to induce in the stammerer a constant habit of speech which shall itself be an exercise of the first class. He says that a stammerer cured is not the same as a man who has never stammered. Without incessant watchfulness on his part the trouble is certain to recur. The recognition of this fact will prevent much disappointment and misapprehension which too often arises from a belief that the secret of cure is some specific in the hands of this or that practitioner. The treatment of every case is essentially individual.

17. **Phlegmonous Cholecystitis.**—Wright reports three cases of phlegmonous cholecystitis, one of which terminated fatally. He says that in any case in which there is a suspicion of phlegmonous cholecystitis an immediate operation is no doubt demanded. The exposed gall bladder should be incised, emptied of calculi or bile, and drained, or if it is gangrenous and the patient is not too feeble it should be removed (cholecystectomy). The surrounding area will need cleaning and draining if it is infected.

The Clinical Journal, London.

September 5.

18 Dilatation of the Stomach. R. Hutchison.
19 *Deformities of the Arch of the Foot and of the Toes. E. M. Corner.
20 *Pericarditis in Children. H. W. Syers.

September 19.

21 *Treatment of Surgical Emergencies. A. Baldwin.
22 *Blepharitis. N. B. Harman.
23 Surgical Treatment of Hepatic Cirrhosis. C. G. Cumston.

19. **Deformities of Toes.**—Corner describes some of the common deformities of the toes. The most common affect the big toe and may be classified as deviations to the outside, hallux valgus; to the inside, hallux varus; to the dorsal face of the foot, hallux extensus; to the planta surface, hallux flexus, and hallux rigidus, a position midway between hallux extensus and hallux flexus. In the production of hallux valgus the bone is altered instead of the joint, the head of the metatarsal bone being irregularly developed in consequence of the numerous slight injuries which it receives, while the direction of the toe is determined by the shape of the boot. Pointed toed boots necessitate an outward direction of the toe, producing a hallux valgus. The brunt of the injury to the front part of the foot is borne by the lower part of the head of the first metatarsal bone, which consequently hypertrophies and changes the direction of the articular surfaces, so that the great toe becomes bent toward the dorsal surface of the foot, causing hallux extensus. This deformity is especially favored by high heels or a high arch to the instep (pes cavus). In flat-footed people the tendency is to throw the weight on the outer part of the foot, to limit the dorsal movement of the great toe and to produce hallux rigidus and finally hallux flexus. In these cases pressure and injury from tight shoes occur to the upper part of the head of the first metatarsal and the toe is displaced downward. Thus it will be seen that hallux flexus is associated with the abducted, flat or resting position of the foot; that hallux extensus is associated with the adducted, arched, or active position of the foot; and that each has a condition of the big toe for which the present name is hallux rigidus, which represents the corresponding deformity in a minor degree. Thus there are two types of hallux rigidus, one leading to flexion and the other to extension of the great toe. A similar minor change may be connected with the development of hallux valgus. Hallux valgus, when produced as a primary deformity as the result of mesially pointed boots, has a very deleterious effect on the future use of the foot. Even though people may have a good, active, arched instep, should they develop a primary hallux valgus, the abducted big toe prevents the foot assuming the position of activity and the arch of the instep slowly and steadily flattens, the foot becoming abducted. Treatment while the deformity is remediable is very desirable. Hallux varus occurs as part of the extreme abduction of the foot which occurs with a very high arch. The position of the foot in activity is associated with a position of the toes, consisting in dorsal flexion, *digiti extensi*; in the case of the second toe this position is apt to be exaggerated on account of its length and because it is displaced by the big toe in the position of hallux valgus. This position of the second toe may cause pain and lameness and the condition is called hammer toe. The toes may become *digiti rigidi*, or pass to the deformity of *digiti flexi*. Pes cavus is the deformity resulting from the correction of the inversion (varus) of the active and adducted position of the foot; typically it is associated with equinus. Pes planus is an exaggeration of the eversion (valgus) of the resting and adducted position of the foot; typically it is associated with calcaneus.

20. **Pericarditis in Children.**—According to Syers, pericarditis is not so usual a concomitant of acute rheumatism as was formerly thought, but when it does occur it is acute, tenacious and persistent, being attended with greater risk, both as regards the complete obliteration of the pericardial cavity and subsequent degeneration of the heart muscle. In children it is frequently not associated with joint affection, all that is complained of being some aching in the joints or limbs and "growing pain." The pressure of the pericardial effusion on the lower lobe of the left lung may produce signs interpreted in favor of consolidation presumably pneumonic—dulness and bronchial breathing may be present. Syers thinks that this occasions a frequent mistake in diagnosis. In the early stages of pericarditis a friction sound and a double aortic murmur are apt to be confounded. The error is invariably to interpret the murmur as due to friction. He also notes the fact that loud murmurs in the aortic region are frequently produced by minute lesions and justify a more favorable prognosis than is often given on account of them.

21. **Treatment of Surgical Emergencies.**—Baldwin discusses the emergency treatment of foreign bodies in the ear, nose, esophagus, larynx, trachea and bronchi, and of hemorrhage after tooth extraction, tonsillotomy and adenoids, and of epistaxis and hemorrhage from scalp wounds and after excision of the tongue.

22. **Blepharitis.**—Harman advises the frequent bathing of the eyelids with an alkaline lotion—simple bicarbonate of soda; plenty of soap and water and friction with a flannel will do just as well. A good cleansing given by the surgeon himself, and a final light swabbing with a weak solution of silver nitrate, will do more than gallons of lotion liberally bestowed during many weeks. Then the application of a smooth antiseptic ointment will keep the lids soft and reduce the liability to the collection of more crusts and scabs. Plain boric ointment in yellow vaselin, or a doubly diluted ointment of ammoniated mercury, or the yellow oxid of mercury in a mixture of lanolin and vaselin to the strength of 1 per cent., are all of value, the last perhaps most of all. These measures will do much to reduce the unsightly ravages made by the disease, but they will not touch the thing which is most frequently the real cause of the irritation. To get at this the refraction of the eye must be made out, objectively, by retinoscopy, and any irregularity found must be corrected with glasses.

Revue de Gynècologie, Paris.

Last indexed, page 1059.

24 (X, No. 4.) *Myomes et fibromyomes kystiques de l'utérus. P. Latteux.
25 *144 Hysterectomies abdominales pour fibromes. W. Cazenave.
26 *Sur la prétendue menstruation des femmes enceintes (during pregnancy). V. Wallich.
27 *Le kraurosis vulvæ. F. Jayle.
28 *Etude des hématuries gravidiques d'origine vésicale. R. Proust.

24. **Cystic Fibromyoma of the Uterus.**—Latteux gives the clinical history and histologic findings, in three colored plates, of a case of this kind. The patient was a woman of 43, with irregular, scanty and painful menses since the age of 13, and abdominal pains at times during the last three years, aggravated by reclining. Multiple fibromata were found in the uterus, and the organ was removed, with rapid healing.

25. **One Hundred and Forty-four Abdominal Hysterectomies for Fibromata.**—These operations were performed in Pozzi's service in the last five years. The mortality was 8.31 per cent.; in each of the 12 fatal cases there was pre-existing infection either in the fibroma or in the adnexa. About half of the patients were between the ages of 40 and 50. In 84 out of the 144 cases, complications existed; they involved the fibroma in 20 cases; the adnexa in 27; the peritoneum or intestines in 22; a tumor was found in the adnexa in 11 cases, and cancer in the uterus in 3. In one case a dead two-months fetus was found. Several of these complications were associated in some instances. The ovarian function was retained whenever possible and advisable. Seven of the patients had undergone a previous partial operation.

26. **Menstruation During Pregnancy.**—Wallich concludes from a careful review of the literature that an absolutely authentic instance of menstruation in a pregnant woman is unknown. Hemorrhages may be observed, but they lack the periodicity and other characteristics of physiologic menstruation.

27. **Kraurosis Vulvæ.**—Jayle presents 11 plates to illustrate his study of this subject, based on some cases personally observed and those on record. He remarks that kraurosis is frequently associated with leucoplasia, causing "white kraurosis;" when complicated with inflammatory lesions there is "red kraurosis." It is observed sometimes after removal of the ovaries or of the uterus and ovaries, and also in women affected with atrophying sclerotic ovaritis. Senile or presenile kraurosis also seems to be associated with ovarian lesions of this kind. Leucoplasic kraurosis became complicated with cancer in about 10 per cent. of the cases observed, and senile or presenile kraurosis likewise seems to favor the development of cancerous lesions, but this tendency has never been observed with postoperative kraurosis.

28. **Hematuria of Vesical Origin in a Pregnant Woman.**—Proust relates the details of a case in which after an accident a pregnant woman had profuse hemorrhage from the bladder. He attributed it to a varicose vein in the bladder, as he believes that pregnancy is liable to interfere with the circulation in this organ, and thus induce a tendency to varicose enlargement of the veins. Only two similar cases of serious hemorrhage have been reported, but the cystoscope confirms the frequency of the varicose engorgement of the bladder wall. One of the patients was cured by aspiration of the blood clots and local hemostatic measures, but a high incision, with direct hemostasis and suture, is the safest and most certain measure in serious cases. The hemorrhage once arrested, the pregnancy continues undisturbed.

Centralblatt f. Gynäkologie, Leipsic.

Last indexed, page 1234.

29 (XXX, No. 29.) *Zur plastischen Verwertung des Uterus bei Defekt des Sphincter vesicæ. M. Hofmeier.
30 *Zur Kasuistik der Geburten nach vaginaler Sectio cesarea und Vaginifixur. Westphal.
31 (No. 30.) Zur Frage der mechanischen Frucht-Abtreibung (abortion). F. Hehl.
32 Ueber die Breus'sche Hämatom-Mole. A. Zinsser.
33 (No. 31.) *Ueber Lumbal-Punktion bei Eklampsie. E. Pollak.
34 Zur Alexander-Adams'schen Operation. H. Palm.
35 Fall von ausgetragener intraligamentärer Graviditât (at term). H. Rodiger.
36 (No. 32.) *Subcutaneous Pubiotomy.—Die Pubotomie mit der Nadel. E. Bumm.
37 Examination, etc., of Midwives.—Erfahrungen bei Prüfungen und dem Nachexamen der Hebammen. R. Dohrn.
38 Ueber Dermoide des Beckenbindegewebes (pelvic connective tissue). K. Reinecke.
39 (No. 33.) *Causes of Disinfecting Action of Alcohol.—Ueber die desinfektorische Wirkung des Alkohols und ihre Ursachen. H. Füth.
40 Benutzung des stumpfen Hakens zur Erleichterung der Armlösung (use of hook for freeing arm). E. Hoerschelmann.

29. **Plastic Utilization of Uterus for Defect of Vesical Sphincter.**—Hofmeier relates the case of a woman of 41 with a vesicovaginal fistula. Three operations had failed to restore continence. This was finally attained by drawing over the uterus to form a pad to compress the urethra. Menstruation proceeds almost normally although with slight disturbances.

30. **Births After Vaginal Cesarean Section and Vaginofixation.**—Westphal has performed this operation in 11 cases, and here relates the normal course of one and two pregnancies occurring subsequently in two of the women. The usual disturbances were noted in a third case of delivery after the old Mackenrodt technic had been applied, but there were no after-disturbances following the two Dührssen operations.

33. **Lumbar Puncture in Eclampsia, from Neurologist's Standpoint.**—Pollak found such serious changes in the cells in eclampsia that he is convinced the lesions are already irreparable when lumbar puncture is given a trial, as a rule.

36. **Subcutaneous Pubiotomy.**—Bumm has been so much pleased with the results of what he calls "pubiotomy with the needle" that he states that he would not hesitate to do the operation anywhere, at need, even in a private house, as it is so simple and harmless. The only break in the skin is where the needle is inserted below and where it emerges above, after skirting the back of the pubic bone. The Gigli saw is then drawn down and out with the needle, and the bone is sawed. This operation enlarges the pelvis sufficiently even with a true conjugate diameter of only 7 cm. The parts separate for 3 cm. He has performed the operation 11 times and never required more than a minute or two.

39. **Disinfection with Alcohol.**—One of the factors in this method of disinfection is the constant increase in warmth of the skin treated with the alcohol. The temperature may rise nine degrees Centigrade, and even this temporary heating, Füth claims, may help to check the growth of micro-organisms.

Deutsches Archiv f. klinische Medizin.

41 (LXXXVII, Nos. 3-4.) *Study of the blood.—Zu meinen Blutuntersuchungen. (Nachprüfungen; einige weitere Beiträge.) J. Arneth.
42 *Relations Between Stomach Secretion and Intestinal Putrefaction.—Ueber die Beziehungen von Magensaft-Secretion und Darmfäulnis. D. von Tabora.
43 *Zum Verhalten der Langerhans'schen Inseln bei Diabetes mellitus und zu ihrer Entwicklung. K. L. Karakascheff.
44 *Ueber Polycythämie mit Milztumor. F. Lommel.
45 Ueber den Nährwert des Glyzerins (nutrient value). B. Krapp.
46 *Ueber die Wirkung der photodynamischen Substanzen auf weisse Blutkörperchen (action on leucocytes). H. Salvendi.
47 Photodynamic Phenomena.—Ueber den Ablauf der photodynamischen Erscheinung bei alkalischer, neutraler und saurer Reaktion. R. Dax.
48 *Ueber experimentelles, neurotisches Lungen-Oedem. L. Jores.
49 Action of Ultraviolet Light on Enzymes.—Ueber die Wirkung des ultravioletten Lichtes auf Enzyme. A. Jodlbauer and H. von Tappeiner.
50 Zur Kenntnis des Schwefelstoffwechsels beim Phthisiker (sulphur metabolism). W. Brasch.

41. **Classification of Leucocytes.**—For years Arneth has been studying with special interest the behavior of the neutrophile leucocytes, and his conclusions have been accepted by most writers on the subject. He classifies the leucocytes in three main groups: 1, Normal numbers of leucocytes (normocytosis); 2, increased numbers, and, 3, diminished numbers of leucocytes. Each of these groups has the three subdivisions: *a*, neutrophile cells developed above the normal; *b*, the neutrophiles normal, and *c*, the neutrophiles pathologically altered. For these subdivisions he uses the prefixes hyper (for *a*); normo or iso (for *b*), and aniso (for *c*). By this means a single term expresses a complicated condition, as, for instance, anisohypercytosis means a condition in which the number of leucocytes is above normal while the neutrophiles are pathologically altered. According to his conception, the body in its struggle against toxins uses up large numbers of neutrophiles, and substitutes for them must be provided, which process occurs according to certain established laws that will well re-

pay further study. The neutrophile cells are the liveliest and the most powerful of all the cells engaged in the defense of the body, and if isohypercytosis can be artificially induced by injection of some extraneous substance, it may thus prove possible to enhance materially the energy of the resistance offered by the organism. Up to the present time the substances injected to induce hyperleucocytosis have not succeeded in inducing the production of increased numbers of normal neutrophiles, but instead anisohypercytosis, that is, hyperleucocytosis with the neutrophiles pathologically altered.

42. **Relations Between Gastric Juice and Intestinal Putrefaction.**—Hydrochloric acid has direct bactericidal action and, aside from this, the gastric juice in general has a far-reaching influence in regulating putrefactive processes in the intestines. When the proportion of acid in the gastric juice is below normal, the putrefactive processes occur unregulated and unchecked, and if the resisting powers of the intestines are unduly taxed otherwise, trouble is liable to result. Nine tables are given by von Tabora with details of the diet of various patients, and of the metabolism as revealed in the urine and stools, and the stomach findings after test meals.

43. **Langerhans' Islands and Diabetes.**—Karakascheff published some time ago the results of research in 4 cases of severe diabetes, and here gives another series of 5 cases, all terminating in fatal coma. He also reviews the findings in a number of children and fetuses in regard to the development of Langerhans' islands and the glands of the region. The conclusions harmonize with those in his previous work, namely, that not the islands of Langerhans alone, but the whole of the parenchyma of the pancreas are more or less involved in the production of what is called pancreatic diabetes. Marchand admits the possibility that the parenchyma may become transformed into islands.

44. **Polycythemia with Enlarged Spleen.**—In the case described by Lommel the autopsy findings indicated that the increase in the numbers of blood corpuscles was probably due to a chronic stasis in the domain of the portal vein, which was also responsible for the enlargement of the spleen. The syndrome of polycythemia with enlarged spleen may be the result of these factors more often than has hitherto been suspected. In the case reported the capacity of the hemoglobin for oxygen was low, but the viscosity of the blood was extraordinarily high, and yet the blood kept up its circulation without enlargement of the heart, even under these circumstances.

46. **Action of Photodynamic Substances on Blood Corpuscles.**—Salvendi's experiments revealed that photodynamic substances have an unmistakably injurious action on the leucocytes, especially on the lymphocytes. The latter break up under their influence in two hours, while the leucocytes resist for twelve days and more.

48. **Experimental Pulmonary Edema.**—Jores has been studying why pulmonary edema does not develop in certain conditions which seem to invite it. He found that disturbances of the gas interchanges have no influence on its development. Even carbon dioxid does not entail edema of the lungs by direct injury of the capillaries in the lungs. On the other hand, he found it possible to induce pulmonary edema in animals by irritation of the peripheral stump of the vagus. This neuropathologic element in the development of pulmonary edema in man has been comparatively neglected hitherto. The vasodilating fibers which are responsible for the edema act on both lungs, even when irritated merely on one side. His experiments were made mostly on dogs and rabbits.

Deutsche medizinische Wochenschrift.

51 (XXXII, No. 36.) Behandlung der Blutungen aus dem Verdauungskanal (hemorrhage from digestive tract). H. Leo.
52 *Improved Technic for Detection of Occult Blood.—Vergleichende Untersuchungen über den Nachweis von Minimalblutungen in den Fæces nebst einer neuen Modifikation der Benzidin-Probe. E. Schlesinger and F. Holst (Strauss' clinic, Berlin).
53 *Operative Behandlung der genuinen Epilepsie. F. Rinne.
54 Die scheinbaren elektrischen Ladungen des menschlichen Körpers (electric charges of body). Sommer and R. Furstenau.
55 *Sleep for Children.—Einiges über den Schlaf im Kindesalter. Cassel.
56 Spirochæta pallida bei experimentell erzeugter interstitieller Hornhautentzündung (keratitis). Greeff and Clausen.

52. **Detection of Occult Blood in Stools.**—Schlesinger and Holst have been making a comparative study of the various tests for occult blood in stomach contents and feces. They found the benzidin test the most sensitive, and regard it as an advance, but they have modified it in some points which ensure still greater accuracy and eliminate some sources of error. They advocate marking off the stools with charcoal, and they mention the importance of refraining from meat and from drugs containing hemoglobin or iron for three days before the test. For the modified benzidin test a concentrated solution of benzidin in glacial acetic acid is made fresh; a little benzidin and about 2 c.c. of the acid are shaken up together and set aside to dissolve. A piece of feces about the size of a bean is stirred into a test-tube about one-fifth full of water. The tube is then plugged with cotton and the suspension of fecal matter is heated to boiling over a flame. It is advisable to have special test-tubes for this work, 10 cm. long, so that there need be no fear of any accidental contamination with blood or iron. About 10 or 12 drops of the concentrated solution of benzidin are poured into another test-tube and from 2.5 to 3 c.c. of a 3 per cent. solution of peroxid of hydrogen is added. This mixture is the reagent, and one or two drops of the boiled suspension of feces are then added to the reagent after shaking. In case of the presence of blood the brownish fluid turns green or blue. The more blood present, the more the tint inclines to blue, and the color reaction occurs very early, requiring only from a few seconds to two minutes or more with very minimal amounts of blood. The green or blue of the positive reaction turns to a dirty purple after from five to fifteen minutes. If there is no blood in the feces, the color of the brownish fluid remains unaltered even after twenty-four hours. The test as modified is much simpler than the others in vogue, while boiling the feces excludes error from any oxidizing process that might simulate the blood reaction. The modified test further allows constant control of the reagent and of the test-tubes.

53. **Operative Treatment of Genuine Epilepsy.**—Rinne reports a case of cortical epilepsy in which great improvement followed excision of a portion of the cortex. The operation was done in 1894 after the utter failure of all medicinal and other means of treatment. The patient was a man of 27. The epileptic seizures first appeared at 11, and always following the use of the right arm in lifting, striking or boring. The seizures always began in the right arm. They increased in frequency and severity, and there was general marasmus, paralysis of the face and right arm, and extreme amnesia. The brachial plexus was stretched first, with slight but transient improvement. Then a large flap was cut in the left parietal bone and the dura was incised. Nothing abnormal could be detected in the cortex exposed except that electric stimulation caused flexion and adduction of the forefinger and thumb, and, when the stimulation was very strong, flexion and then extension of the wrist and elbow were observed. The movements of the forefinger and thumb were constant and corresponded to stimulation of a sharply defined area, the anterior central convolution. This area was excised for about 1 cm. by 1.5 cm., and for 3 or 4 mm. deep. The bone flap was loosely replaced and the wound drained. From the moment of the operation the patient was free from any tendency to epileptic seizures or aura for seven months, with no signs of recurrence. After the seventh month the seizures recurred, but they were very infrequent and mild, with intervals of six months of freedom and ample warning. His health is excellent otherwise, and he has been able to found and to manage an extensive business, although his right arm is still somewhat weak. Before the operation he had completely lost his earning capacity. The great improvement in this case may possibly have been due merely to relief from compression.

55. **Sleep for Children.**—Cassel mentions among the minor aids for promoting sleep in children, a light turned low in the room. This takes away the dread of the dark and has a soothing effect on certain children. Knowledge of the presence of a trusted person near the bed also promotes sleep, but the child should not be taken into an older person's bed. He cites a Swedish pediatrist of the eighteenth century, who estimated

that, in Sweden, an average of 700 infants were smothered annually in the bed with mother or nurse. A warm bath, about 92 F., for five or six minutes before retiring, has generally a sleep-inducing tendency. It is especially grateful in the febrile infectious diseases, soothing the nerves. A wet pack to the trunk, the temperature about 77 F., when the child goes to bed, may also prove useful, or a cold rubbing down with water, not cooler than 75 F., with or without addition of salt. A tendency to masturbation should be combated by physical exercises, sports and playing in the open air until the child is so tired that he drops to sleep at once on going to bed. Cassel never gives drugs to combat insomnia, accomplishing the purpose by other means, except when a child is kept awake by an annoying cough or convulsions.

Mitteilungen a. d. Grenzgebieten d. Med. u. Chir., Jena.
Last indexed XLVI, page 1654.

57 (XVI, No. 2.) *Zur Chirurgie des Morbus Basedowii. K. Schultze.
58 Zur Kenntnis der Gallenblasen-Bronchusfisteln infolge von Cholelithiasis (fistula between gall bladder and bronchus). H. Schlesinger.
59 *Ueber akuten mechanischen Ileus. Ringel (Hamburg).
60 Ueber perirenale Hydronephrose. O. Minkowski.
61 *Zum Kapitel der Diagnose des extra- und intraduralen traumatischen und pachymeningitischen Hämatoms. F. Apelt.

57. **Operative Treatment of Exophthalmic Goiter.**—This extensive communication from Riedel's clinic at Jena states that out of 50 patients 36 were cured and 6 materially improved, while in one case the intervention failed to benefit, and 7 of the patients succumbed to heart failure within 24 hours. The heart had evidently been too severely injured by the chronic intoxication to stand the stress of the loss of blood and the general anesthesia. Local eucain anesthesia is now used in Riedel's clinic by preference, and the mortality has dropped from 12 to 8 per cent. In 7 of the cases there was recurrence, but it subsided either spontaneously or under internal treatment. The article concludes with the details of the case histories, and seven pages of bibliography on surgical and serum treatment of exophthalmic goiter. Schultze remarks that the numerous encouraging articles from surgeons—reporting success in from 80 to 90 per cent. of cases—should stimulate internists to refer cases of exophthalmic goiter to the surgeon, after failure of internal measures, in time for operative treatment to be effectual. The earlier it is undertaken, the better the results. All the 8 milder cases in his experience were cured, and 80.2 per cent. of the moderately severe cases were cured or much improved, while only 57 per cent. of the severer cases were cured and 7.7 per cent. improved. The mortality in this group was 28.5 per cent. of the 21 patients. The symptoms before and after the operation are critically reviewed. As characteristic of the disease 25 symptoms are cited, with their proportional frequency, as follows: Goiter, 100 per cent.; tachycardia, 94; palpitations, 94; exophthalmos, 92; psychic disturbances, 68; tremor, 66; headache, 52; sleeplessness, 40; sweats, 36; emaciation, 30; Graefe sign, 30; vomiting and diarrhea, 28; Stelwag sign, 22; lachrymation, 18; falling of the hair, 18; Möbius sign, 14; nosebleed, 14; polyphagia, 14; polydipsia, 12; pressure on the eyes, 12; edema, 10; hot flashes, 10; friability of the nails, 8; spots before the eyes, 6, and pigmentation of the skin, 6. The above figures all stand for the percentage. Treatment with Möbius' antithyreoidin (60 cases) and with rodagen (35 cases) seems to be only palliative in its effect according to the reports published by various writers, and these measures do not always benefit. The results of the experiences to date, he concludes, are decidedly in favor of surgical treatment, as this gives better hope of a permanent cure.

59. **Acute Mechanical Ileus.**—Ringel's experience warns that operative treatment should not be deferred too long. Out of 27 patients with acute mechanical occlusion of the intestines from various causes, on whom he operated, 14 died. Autopsy showed more or less extensive peritonitis in all fatal cases, except in two infants who had failed to recover from the shock. One of the patients cured by the operation had a large patch of gangrene on the intestine, consecutive to volvulus. The prognosis is good with prompt surgical measures, but it is grave after complications set in.

61. **Diagnosis of Intradural Hematoma.**—Apelt reports a case of hematoma of the dura mater diagnosed and cured by trephining. He then relates the histories of 13 other cases in which the symptoms or the absence of symptoms was most misleading. In one case a hemorrhagic pachymeningitis simulated an apoplectic lesion; there were no convulsions nor paralysis. The neurologist and the surgeon will be saved many a disappointment, he declares, if before trephining for a supposed hematoma in the dura mater, they first exclude other affections that might exist, such as internal, hemorrhagic pachymeningitis, alcoholism, sunstroke, certain forms of encephalomalacia, apoplexy, thrombosis of important cerebral arteries with consecutive softening, fat embolism after a fracture, and Reichardt's acute swelling of the brain.

Münchener medizinische Wochenschrift.

62 (LIII, No. 29.) Determination of Proteolytic Ferment Action.—Ueber eine einfache Methode zum Nachweis proteolytischer Fermentwirkungen (nebst einigen Ergebnissen, besonders bei der Leukæmie). E. Müller and G. Jochmann.
63 *Die Rolle der Grubeninfektionen bei der Entstehung der Genickstarre-epidemien (epidemic cerebrospinal meningitis and infection in mines). L. Jehle.
64 Pyocyaneus-Sepsis bei Erwachsenen (in an adult). Rolly.
65 Hemiplegie bei intakter Pyramidenbahn (intrakortikale Hemiplegie). W. Spielmeyer.
66 Zur Prognose der Lungentuberkulose. E. Rumpf.
67 Ueber 375 Selbstmordversuche (attempts at suicide). R. Rothfuchs.
68 *Die Anwendung der Hyperämie nach Bier bei einigen Erkrankungen der Diabetiker. K. Grube.
69 Die Romanowsky-Färbung nach May (stain). Viereck.
70 Vereinfachtes Extensions-Verfahren (simplified technic). A. Hofmann.
71 *Functional Activity of the Kidney.—Die Tätigkeit der Niere. R. Magnus.
72 *Protection from Cadaveric Infection.—Wie schützen wir uns und unsere Diener bei Sektionen? C. Thorel (Nuremberg).

63. **Epidemic Cerebrospinal Meningitis.**—Jehle cites facts which demonstrate that in the epidemics at Neumühl and elsewhere the men became infected in the mines. He urges that the fathers of infected children should not be allowed to return to their work in the mines until they have received treatment to render them harmless as bacilli carriers. Workmen coming from infected regions should be treated as suspected bacilli carriers.

68. **Passive Congestion in Treatment of Affections in Diabetics.**—Grube has applied passive congestion or suction therapy in a large number of cases of furuncles or carbuncles in diabetics. He reports here the details of 5 severe cases to illustrate the benefits derived and to urge the more frequent use of the treatment. He has had good results from superheated air in treatment of diabetic gangrene. He applies the hot air at a temperature of 65 C. for an hour daily, and has never witnessed harm, but always benefit.

71. **Physiology of the Kidneys.**—Magnus here presents in compact form the present status of our knowledge in regard to the physiologic activity of the kidneys, analyzing 60 works on the subject that have appeared in recent years. He accepts the theory that the urine is the result of secretory activity, not of a process of filtration.

72. **Protection During Autopsies.**—Thorel has not found that rubber gloves have diminished the number of accidental infections on the part of the general utility men in the dissecting room. On the contrary, the number has increased, probably because the men trust to the gloves and omit the careful cleansing of the hands, or they allow the gloves to become soiled inside. He gives the instructions for prophylactic cleansing of the hands, etc., and for the care of rubber gloves, on a placard in his dissecting room. Simmonds has recently urged that knives should be made with rounding tips for dissecting work, to prevent accidents, and Thorel has invented a holder which holds the skull while it is being sawed, and prevents injury of the hands. He calls attention to the possibility of pulmonary tuberculosis developing in consequence of infection from a tuberculous process on a cadaver. He states that he has had an unmistakable experience of this kind in his environment. The best way to avoid cadaver infection among the attendants is to have them trained and skilled in the measures necessary for cleanliness, and have them insured against accidents.

Zeitschrift f. Geb. u. Gynäkologie, Stuttgart.

Last indexed, page 314.

73 (LVII, No. 3.) *Ueber Pemphigus neonatorum. Koblanck.
74 *Verlauf und Ausbreitung der Infektion beim septischen Abortus. P. Seegert.
75 *Zur Pubiotomie. P. Rissmann.
76 Ueber Epithel-Metaplasie am Uterus, besonders an Polypen. R. Oeri.
77 Epithelial Formations in Lymph Glands and Spaces in Pelvis.—Ueber epitheliale Bildungen der Lymphgefässe und Lymphräume in Beckenlymphknoten bei Uteruskarzinom und bei karzinomfreien entzündlichen Adnex-Erkrankungen. A. Sitzenfrey.
78 (LVIII, No. 1.) Fall von diffusem Myom mit beginnendem Karzinom in der hyperplastischen Uterus-Schleimhaut. V. Doca.
79 *Ueber Eklampsie, Esch.
80 Behavior of Ovaries, Tubes and Remains of Uterus After Total or Partial Removal of Uterus in Rabbits.—Experimentelle Untersuchungen über das Verhalten der Ovarien und Tuben, sowie des Uterusrestes nach vollständiger resp. teilweiser Entfernung des Uterus bei Kaninchen. G. Burckhard.
81 Mechanism of Parturition with Frontal Presentation and Mentoposterior Expulsion.—Beitrag zum Studium des Mechanismus partus bei Deflexionshaltung. A. Leo.
82 *Ueber Endometritis atrophica purulenta fœtida. P. Bröse.
83 Zur Kenntnis der benignen chorioepithelialen Zell-Invasion in die Wand des Uterus und der Tuben. R. Meyer.

73. Pemphigus Neonatorum.—Koblanck has found the *Staphylococcus aureus* almost invariably in his experience with pemphigus in infants. In a recent case the child was born with pemphigus. Syphilis could be absolutely excluded. He has always succeeded in curing the pemphigus with 70 per cent. alcohol applied to the vesicles and their vicinity, carefully preventing the spreading of the germs over the skin. For this reason the bathing of the infants is forbidden until the pemphigus is cured.

74. Course and Distribution of Infection With Septic Abortion.—Seegert states that out of the 15,000 cases of abortion treated during the last 10 years in the obstetric and the gynecologic clinics at Berlin, about 15 per cent. were febrile cases. This is less than the actual number of cases, as many of the patients were seen briefly and fever may have occurred before or after without the physician's knowledge. In case of a pyemic affection after abortion, if an effusion was found in the small pelvis, in addition to the pyemic thromboses and metastases, the case invariably proved to be one in which criminal or artificial injury had preceded the pyemia. In such cases, the thrombi were found more in the uterine veins and the ovarian vessels were seldom free, while metastatic processes in the thorax were always present. About 450 patients presented serious symptoms after a febrile abortion, and 94 died. The autopsy findings in 82 are analyzed to study the course and spread of the infection, with details of a number of cases. Treatment was by digital examination of the uterine cavity, followed by irrigation with diluted alcohol. In the recent cases fluids were given freely, especially wine, brandy, beer, and milk and coffee, combined with solutions of grape sugar. Scrupulous care of the mouth was taken, and in prevention of decubitus. Quinin was given by the mouth in large doses, or if the appetite suffered or vomiting followed, the quinin was given subcutaneously, from six to eight syringefuls of a sterile 25 per cent. solution of quinin bihydrochlorate daily with careful oversight that the patient does not make any movement and is kept as warm as possible. Some of the cases with 70 chills terminated in recovery under this treatment, and even one with metastatic ophthalmia.

75. Pubiotomy.—Rissmann has performed this operation three times and is an enthusiastic advocate of it provided simple drainage of the prevesical space is ensured. Other factors to which he attributes his excellent results are the sagittal incision to spare the muscles, the introduction of the finger to protect the parts during the sawing, the application of a firm bandage over the pelvis during the obstetric maneuvers, the drainage with a special drain, which he illustrates, the absence of a firm bandage over the pelvis during healing, and the advice to be up and about early. There was no temperature in his cases.

79. Eclampsia at Olshausen's Clinic.—Esch continues the previous reports, which comprised 603 cases, by relating the experiences with 496 cases during the years 1900-1905 inclusive. This brings the total to 1,099 cases of eclampsia observed at the Berlin gynecologic clinic since 1885. Of the 496 women, 106, that is, 21.4 per cent., died. In at least three-fourths of the cases the convulsions ceased after delivery, but in 9 instances the eclampsia subsided without interruption of the pregnancy and did not recur during the delivery. In 9 other cases eclampsia had been observed at a preceding childbirth. Among the prodromal symptoms were pains in the stomach in 102 cases, edema in 143, headache in 178, tardy vomiting in 106, amblyopia in 4, and transient amaurosis in 17. In one case the amaurosis lasted only for a few hours and eclampsia developed four weeks later. Bilateral detachment of the retina was observd in one case and vision was not restored completely for several months. In 78 cases the convulsions developed after delivery or during the puerperium. Venesection was frequently applied, from 300 to 400 c.c. of blood being withdrawn.

82. Fetid, Purulent Atrophying Endometritis.—Bröse suggests the term "hysterozena" for the condition of which he describes 2 cases. It is observed only in senile women, and may possibly be due to the action of saprophytes in senile endometritis. Treatment with loose tamponing with iodoform gauze and drainage, after exploratory curettement, has given favorable results. Cauterization with zinc chlorid finally succeeded in conquering the fetid odor. Then the secretion was completely cured by rinsing the uterus with crude wood vinegar (3 tablespoonfuls to a quart of water).

Books Received

Acknowledgment of all books received will be made in this column and this will be deemed by us a full equivalent to those sending them. A selection from these volumes will be made for review, as dictated by their merits, or in the interests of our readers.

INTERNATIONAL CLINICS. A Quarterly of Illustrated Clinical Lectures and Especially Prepared Original Articles on Treatment, Medicine, Surgery, Neurology, Pediatrics, Obstetrics, Gynecology, etc., by Leading Members of the Medical Profession Throughout the World. Edited by A. O. J. Kelly, A.M., M.D., Philadelphia, with the Collaboration of W. Osler, M.D., J. H. Musser, M.D., and others. Vol. III. Sixteenth Series, 1906. Cloth. Pp. 302. Price, $2.00. Philadelphia: J. B. Lippincott Company, 1906.

RHYTHMOTHERAPY. A Discussion of the Physiologic Basis and Therapeutic Potency of Mechano-Vital Vibration, to which is added a Dictionary of Diseases, with Suggestions as to the Technic of Vibratory Therapeutics, with Illustrations. By Samuel S. Wallian, A.M., M.D., President American Medico-Pharmaceutical League, Ex-President Medical Association of Northern New York, etc. Cloth. Pp. 210. Price, $1.50 net. Chicago: The Ouellette Press, 1906.

A MANUAL OF MIDWIFERY. By Thomas Watts Eden, M.D., C.M., Edin. F.R.C.P., Assistant Obstetric Physician and Lecturer on Practical Midwifery, Charing Cross Hospital, etc. With 26 Plates and 233 Illustrations in the Text. Cloth. Pp. 518. Price, $4.20. Philadelphia: P. Blakiston's Son & Co., 1906.

THE SCHOTT METHODS OF THE TREATMENT OF CHRONIC DISEASES OF THE HEART, with an Account of the Nauheim Baths, and of the Therapeutic Exercises. By W. Bezly Thorne, M.D., M.R.C.P. Fifth Edition. Cloth. Pp. 140. Price, $2.00 net. Philadelphia: P. Blakiston's Son & Co., 1906.

A SHORT PRACTICE OF MEDICINE. By Robert A. Fleming, M.A., M.D., F.R.C.P.E., F.R.S.E., Lecturer on Practice of Medicine, School of the Royal Colleges, Edinburgh, etc. Cloth. Pp 748. Price, $4.20 net. Philadelphia: P. Blakiston's Son & Co., 1906

THE EXTRA PHARMACOPOEIA OF MARTINDALE AND WESTCOTT. Revised by W. H. Martindale, Ph.D., F.C.S., and W. W. Westcott, M.B., D.P.H. Twelfth Edition. Flexible Leather. Pp. 1045. Price, $4.20. London: H. K. Lewis, 1906.

VARIATIONS IN THE PEROXIDASE ACTIVITY OF THE BLOOD IN HEALTH AND DISEASE. By J. H. Kastle and H. L. Amoss. Hygienic Laboratory, Bulletin No. 31. Paper. Pp. 26. Washington: Government Printing Office, 1906.

AN INTRODUCTION TO PHYSIOLOGY. By William Townsend Porter, M.D., Associate Professor of Physiology in the Harvard Medical School. Cloth. Pp. 537. Price, $2.50. Philadelphia: J. B. Lippincott Company, 1906.

A STATISTICAL STUDY OF THE PREVALENCE OF INTESTINAL WORMS IN MAN. By C. W. Stiles and P. E. Garrison. Hygienic Laboratory, Bulletin No. 28. Paper. Pp. 77. Washington: Government Printing Office, 1906

MEDICO-CHIRURGICAL TRANSACTIONS. Published by the Royal Medical and Chirurgical Society of London. Vol. LXXXIX. (Second Series Vol. LXXI.) Cloth. Pp. 757. London: Longmans, Green & Co., 1906.

HOW TO SUPPRESS A MALPRACTICE SUIT, and Other Medical Miscellanies. By Thomas Hall Shastid, A.M., M.D., LL.B. Cloth. Pp. 128. Price, $1.50. Marion, Illinois: Marion Publishing Company, 1906.